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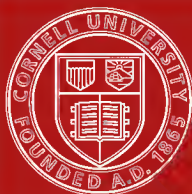
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**LABOR TURNOVER,
LOYALTY AND OUTPUT**

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LABOR TURNOVER, LOYALTY AND OUTPUT

A CONSIDERATION OF THE TREND OF THE TIMES AS
SHOWN BY THE RESULTS OF WAR ACTIVITIES.
IN THE MACHINE SHOPS AND ELSEWHERE

BY

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FOREWORD

The stress of war gave us little time to note the many changes which have taken place in the industries of the country. Now that it is over we are face to face with new problems and those who have not kept pace with the trend toward greater democracy in industry, are startled to find the changing conditions. But while this is perhaps the greatest problem, there are many others all of which bear on production and on future prosperity.

The demands of war work emphasized the need for a greater supply of trained mechanics of various kinds and showed very clearly the shortsightedness which had overlooked the fact that we were not training nearly enough men for the needs of industry. This shortage of trained men has had much to do with the great advance in wages, and with them, the cost of everyday commodities.

Spasmodic efforts have been made to create a supply of mechanics almost over-night, and splendid results have been accomplished by intensive training under qualified instructors in some places. In others the thin veneer of instruction

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has been of little consequence. It has shown very clearly however that intensive training can lay a foundation from which we can secure mechanics of various kinds in a very short time, and that such schools are of great value to the industry and to the community.

This training, however, especially that which only taught one operation, has not had the desired effect on reducing labor turnover. Nor is the cause of changing from one factory to another always the result of higher wages. Sheer monotony and the desire to do something different has much to do with it, and for the most part nothing has been done to meet this phase of the problem, if indeed it is generally recognized.

This little book endeavors to point out some of the methods by which men and women may be induced to take an interest in their work, these being based to a considerable extent upon the successful experience of Robert B. Wolf in his handling of paper and pulp mills under various conditions. This for the most part, has a direct bearing in making them better workers by adding to their fund of knowledge about their work and the industry in general. It can also be made to add to their value as citizens, which is going to be an even more important item in the future than in the past.

The book also takes up some of the broader problems which are being presented and which are bound to confront us in increasing numbers, the problems of shop government and the relations between the employer and his employees. For, just as many small autocratic governments are crumbling in Europe, so many of our most foresighted men, both manufacturers and economists, believe that similar changes are bound to occur in industry. The manufacturers who attended the Babson Conference on Co-operation were unanimous in the belief that arbitrary methods of shop management were not only unjust but unwise, and that the workers should have a voice in all matters that affected their welfare in the shop as well as out.

The changes wrought by the war have not been lost on the workers in this country and the desire for a voice in shop government is more deeply rooted than many realize. Those who have studied the question most carefully believe that safety lies in meeting the desire half way, or more. They believe that it is necessary for progressive manufacturers to co-operate with the sane element of the labor movement in order to prevent a clash between the radical element of labor and the reactionary employer, who is the autocrat of his shop just as the Czar was the auto-

crat of all the Russians. Such clashes are to be deplored from every point of view.

I am indebted to James Hartness, a highly successful manufacturer, for the inspiration received from his book, "The Human Element in Works Management." He deserves especial credit for being one of the pioneers in the movement for a better understanding of the human side of the problems of the machine shop.

In the belief that the good of the country, as well as of the industries demand a careful consideration of these problems and that many changes are before us, I have endeavored to present some of the problems and to suggest possible solutions for some of them. No one today is wise enough to outline the precise way in which these problems will be solved. But no citizen who loves his country and his fellow man can shut his eyes to the impending changes or strive to prevent what the great majority deem progress.

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LABOR TURNOVER, LOYALTY AND OUTPUT

CHAPTER I

LACK OF INTEREST AND LABOR TURNOVER

We have learned much during the past few years about the expense of labor turnover and its effect on the cost of production. It has been shown in figures how the actual cost of hiring and firing a man may run from \$20 to \$2000 depending on the kind of a man and the importance of the job, and we have discussed many ways of reducing this labor turnover.

The situation was very acute in certain centers, such as Detroit, where along in 1912 and 1913, some of the plants had a turnover of 600 percent a year. In other words the average length of time which an employee staid on one job was two months, or to put it still differently, the whole force changed on the average of six times a year. A large percentage of the labor was

unskilled as well as being foreign born, jobs were easy to get, and for various reasons men shifted from factory to factory.

Then came the Ford bonus or profit-sharing scheme which immediately made it a decided object not to leave the Ford plant, and the turnover was checked in this plant to a considerable extent. Some of the conditions of the bonus as at first put into practice, were somewhat inquisitorial, some of which was probably necessary in view of certain conditions which had to be met and overcome. For it must be remembered that the principal object in Mr. Ford's mind was to make every man have a home of his own, free from boarders or other outside influence, and to give every child a fair chance at an education. The methods have been greatly modified since the inception of the plan and many of the features to which some objected, no longer exist. The fact remained however that turnover was very materially reduced and, as a consequence, production increased accordingly.

There can be no question as to the effect of a substantial bonus or a higher wage than the average, in maintaining a constant working force. But it is not always possible for a small concern, or a large one either for that matter, to pay a higher rate than the rest of the com-

munity. And unless this is done, some other means must be found to make it an object for men to stay in one shop instead of wandering from place to place, as has become the habit in some localities.

But reducing turnover does not necessarily mean that you are getting the greatest output from the plant. For, even though there are no machines idle, it takes no expert in scientific management to know that they are not all running as efficiently as they might.

The scientific management expert immediately wants to introduce his particular system, which in too many cases consists of a series of printed forms for recording what *has been done*, instead of suggesting a rational method by which the output can be increased without speeding up or further antagonizing the workers. Some want to study the problem in various ways, and lay down fixed rules for every movement of the hand or arm during the various operations. Each of these has its place and can be made to secure much valuable information. Unfortunately this information is not always used judiciously from the human or individual standpoint, and the result is still more antagonism. But, worse than that, it tends to kill real, human interest in the work. And this is a far more important factor

in shop management than has been realized by many.

THE LACK OF INTEREST

There are frequent complaints from shop managers that men no longer take an interest in their work, that "six o'clock and pay day" is the main thought. Careful observers agree that this complaint is true, in part at least, and that it has a direct bearing on production and on all industrial relations.

Interest in one's work makes it an inspiration to better things; lack of interest turns it into a drudgery, to be borne under protest, and for as short a time as possible.

The desirability of securing the interest of all workers in their daily tasks needs no argument. It is as advantageous to the employer as to the worker, for it inspires the employee to improve both the quality and quantity of the product, and it makes him or her a much better citizen in every way. But it must be a real interest in the work itself as well as in the financial returns which come as a reward.

We sometimes long for the days of the old-time machinist who took as much pride and interest in his work as did the owner himself; who did a good job because he was not satisfied

with anything less. But few of us stop to analyze the reasons for the change, and seem to forget that every effect has its cause. Let us look back and see what some of the causes may have been.

The days we long for are the days of the old-time apprenticeship when the boy learned to run every machine in the shop; when he had a great variety of work; when there were no great social distinctions and no great concentrated wealth, as we know it today. The shops were smaller and there was a much closer contact between the "boss" and his men, more chance to talk over each new job and give the different men a chance to express their opinion as to the best way of doing it. Each man felt a much greater responsibility as he could see the direct effect of his work on the output of the shop as well as on its reputation.

BREAKING UP THE APPRENTICE SYSTEM

Then came the beginning of the expansion of the machine industry and with it the beginning of the stealing of men from one shop or from one locality by another. This meant an increase of wages in nearly all such cases and this resulted in offering the apprentice boys who were part way through their course of instruction, a much higher rate than they were then

receiving. The offer of much higher wages, particularly in view of the extremely low-wage rate then paid apprentices, was too great an inducement, and many boys jumped their contracts, even though they might now be better off if they had not done so. This led to the abandonment of the practice of teaching apprentices in many shops and there are now comparatively few which continue their old-time apprenticeship courses. Those who do, believe it to be a paying investment, but it seems safe to say that the old-time apprenticeship, as an institution, is gone forever.

With the abandonment of the apprenticeship system came, of necessity, the splitting of the work up into operations so as to enable less skilled men to handle it. This was the beginning of the "lathe hand," "planer hand" and "drill press machinist" which are so common at the present time. Added to this was the wave of so-called scientific management which swept over the country and which advocated the still further division of the work into sub-operations so that the worker was no longer a machinist in any sense, but an "operator," whose sole duty was to perform a very few motions which could not readily be performed by the machine itself.

To make matters worse we began to talk

about "fool-proof" jigs, to advocate the centering of all the brains of the establishment in the office, to plan out beforehand every operation and every movement which the worker must perform. We began to separate the shop personnel into thinkers on the one hand and appendages to machines of various kinds on the other; to take out the little remaining human elements and to substitute an impersonal planning department, made up in too many cases from young college graduates with little or no shop experience. In other words we took away all the interesting parts of the work and made the men into attachments to machines, demanding in many cases that they follow exact motions laid down by others, in performing their daily tasks.

After dehumanizing the shop, so far as consulting with the men actually on the job was concerned, and making the operators into automatons so far as possible, we found much discontent and the lack of interest became very noticeable. But instead of attempting to find the cause, to get at the real psychological reasons for the lack of interest, too many shops adopted the paternal attitude and began to "do things for the employees," and in many cases to do them in such a patronizing way as to offset any good which they might otherwise have accomplished.

Much of the so-called welfare work is to be highly commended, it all depends on the spirit which is behind it and in the personnel of staff who execute it. It can be very helpful or very harmful, depending on the way in which it is carried out. Anything which helps to improve the health and safety of workers, either in the shop or out, helps them to turn out more and better product. For even where we have "fool-proof" tools we find that a skilled operator can usually turn out a much larger product than one who is indifferent or inexperienced.

And this is what gives us a clue to a possible solution of some of our difficulties.

REVIVING INTEREST IN THE WORK

The old apprenticeship system has gone never to return. The subdividing of work into more or less minute operations has come to stay. The problem is to so humanize the relation of the employee and the work as to revive so far as possible the old-time interest which is now lacking in too many cases. It is not only a question of wages, but a question of creating a real interest in the work itself. When this is done, and it can be done, the result is not only shown by a contented lot of employees but by an increased output and a better quality of product.

The planning department must not be an autocratic institution which dictates just how every worker in the shop must move and act under all circumstances. It must be the clearing house for all the ideas which may be evolved in any department of the plant. And the greenest laborer or the newest office boy may have an idea of value. In any case they must be made to feel that they are a part of the institution and that no matter how large it may be or how small their part, that their ideas and suggestions will receive consideration.

But this is not all. The "suggestion box" is good and should be used, but we must definitely plan and study how to make each part of the work of real interest to the employees. It is not an easy task but is in fact, far more difficult than the running of an ordinary planning department. It is, however, capable of great development and can be made of greater value than any other one thing about the plant. The united brains of the whole number of employees in the plant can be of much more value than those of any selected few, and the value of having every one in the plant interested in his or her job, can hardly be over-estimated. And we must not forget that this has a direct bearing on production.

CHAPTER II

BUILDING AN ORGANIZATION

The first step is for the man at the top to decide whether he really wants to build up a loyal and interested organization or not. And if so, whether he is willing to pay the price. For everything has its price and the more desirable it is the higher the price we pay for it. But the price is not likely to be in money, for such an organization will be more productive than we realize.

Every business man can look back to some period of his life where a faithful few performed wonders in productive effort. Not so much because they were unusually strong or exceptionally skilled as because they were all keenly interested in the work to be done and each worked without a question as to whether he was doing more than his share or not. And then it often happened that, after a little group like this have pulled the business up on to solid ground and the financial tide turned, jealousies and suspicions as to the proper division of the profits crept in, and the production dropped at an amazing rate.

The building of a loyal organization cannot be done for selfish ends alone and have it be permanent and successful. The true ends always come out in unexpected ways and the structure falls. There must be a real desire to have a closely knit organization in which each individual is recognized as such, and not merely as one of a mass with a number instead of a name. The number may be necessary as a book-keeping expedient, but no man who is *only* a "number" to the man at the top can retain his full measure of self-respect and be a real unit in such an organization.

Each member of the organization must be made to feel that he is really a member of the family instead of being an appendage to a machine, with only a number tag as a designation.

The price of building such an organization is not one of money, as before stated. It is the giving up of most of the old idea of aloofness and superiority, the getting of a really human feeling for the whole organization. This does not mean that undue familiarity is necessary or desirable but it does mean that we must lay aside all feeling that would prevent us from being as fair in judging others as we wish them to be in judging us, to drop any paternal attitude we might have acquired. The price is in realizing

that it requires personal work and human contact; that the man in the shop must always be considered as a human being with similar instincts and desires to our own, and that in making rules and regulations we consider how the same rule would appeal to us were the circumstances reversed.

BEING MISUNDERSTOOD

We must expect that our motives will be misunderstood and that a certain amount of suspicion will be found at the beginning. But we must not forget that unscrupulous managers have "put over" various kinds of wage cuts and speeding-up devices under different guises, that we might also be suspicious were we in the workers' shoes. Then too there are over assertive individuals in the shop as elsewhere, who are never satisfied, and who want everything in sight for themselves. But we must not be misled nor discouraged by a few obstacles, and we will find that the great majority of the workers will respond just as fast as they understand and appreciate the motives and the objects to be attained.

Let us bear in mind that the real object is to secure the interest of every worker in the success of the plant, to make them realize that the more

they know about the work, the more they help in every way possible, the better for all, including themselves, in some substantial manner. And as it is necessary to arouse and maintain interest in the work and in the welfare of the plant, we should consider as many ways as possible of securing this interest which is so much to be desired, not only for itself, but for its effect upon output.

AROUSING INTEREST

There are many ways of arousing and maintaining interest and new ways will crop up from time to time when we give the matter systematic and careful attention. A few methods are suggested herewith, some of which are being used with satisfactory results in different places. These are only suggestions and may be modified or greatly improved upon to fit the special conditions of each plant.

Every progressive concern goes to considerable expense and uses great care to arouse enthusiasm in each salesman regarding the merits of their product. Every salesman can do better work with a firm conviction that the product he sells has many points of superiority over rival products. Yet few firms ever pay any attention as to whether the men and women who make the

product, even know what it is for. Is it not reasonable to suppose that if the workers can be enthused over the product, perhaps by the same or by entirely different methods than is used for the salesmen, that they will try to make it even better or at least to maintain its quality?

At one of the airplane factories which actually built planes for us during the war, they considered it good business to give the workers a recess for an hour or even two, on occasions when new types of planes were being put through their paces by the aviators. This cost money and might be considered to have delayed production. But the result was more careful attention to details, greater care in all parts of the work, and the loss of production was soon made up, unconsciously perhaps, by the workers who were thrilled by the performance of the machines which they had helped to build.

This also has another and perhaps sub-conscious effect in the recognition of the workers as being necessary in the production of the planes as well as being humanly interested in seeing them go through their paces.

No opportunity of this kind should be overlooked, particularly those which will impress the workers with the merits of the product on which they are working.

EXPLAINING THE PRODUCT

Details of the various parts of the product, particularly the part on which they are working, showing the relation of each piece to the others, can well be shown in enlarged drawings, or by the parts themselves, in section or otherwise as may seem best.

This of course assumes that we have abandoned the plan of keeping the workers in ignorance of their work or the details of its production. There may be places and reasons for keeping some things secret but these are few and far between and most fancied secrets are secrets only in the imagination of the deluded proprietor. There are to be sure, cases where the foremen and superintendents throw a veil of secrecy around some of the methods which they have introduced. In some cases however this is to hide the fact that they have stolen them from some other shop or to prevent outsiders seeing how out-of-date they are.

The benefit to be gained by keeping shop secrets away from the workers themselves are so minute that there is very seldom any excuse for even attempting it. It is notorious that the departments of shops which are kept from the

gaze of the visitor are invariably those with the most antiquated equipment and methods.

Showing the parts of the machine or other apparatus which is being worked on, gives the best kind of an object lesson on the effect of inaccuracies in the different parts. It emphasizes the need of care in the work and cannot fail to interest the worker in trying to be more careful.

THE BULLETIN BOARD

A large Bulletin Board in a conspicuous place can be made very effective in promoting human relationship and securing interest in the work at the same time. This work should be put in the hands of some live member of the organization who will avoid the usual dry-as-dust announcements. Short pithy paragraphs, exceptionally good cartoons, snappy poems which bear on the affairs of the industry or the country, and other matters can be used to advantage. These can be so planned as to be of live interest and to arouse, unconsciously perhaps, a desire to do one's best for a concern which takes pains to let the whole shop know how things are going.

Even regular notices can be made interesting by the right wording. In one case where a vacation,

with pay, was being announced as an experiment the wording was something like this:

"In order not to delay the work of the shop it will be necessary to arrange vacations with care. This can be done with a little coöperation. It is up to you whether these vacations become a habit or a memory."

The spirit of the announcement coupled with the spirit of the man who wrote it, which was well known to every employee, assured the vacations becoming a habit instead of a memory.

Bulletins concerning orders which are in the shop or which will be in process aid greatly in interesting the whole force. These can usually be given with a little forethought and care in an interesting manner. And they help to make the work in hand interesting to the workers in different ways.

Can there be any question as to the men at the Ford forge shop being more interested in their work on forgings for Liberty motor cylinders, than as though they had not known what they were for? Even the most monotonous work, such as running a bolt cutter, becomes more interesting if the bolts happen to be going to the Trans-Siberian railways or to other interesting places.

A map of the railway on the Bulletin Board

together with some interesting information about the railway and the people, would help along the general interest in the order. If the bolts happened to be going to that part of the world from which the operator came from, it would certainly pay to let him know as much about it as possible.

Holidays of different kinds can readily form the basis for an interesting bulletin. This is just as true of those we do not celebrate as those we do. In the case of the foreign holidays, it will do much to promote good feeling to have a nicely worded Bulletin about them as they occur. Some little recognition of the day, by having the foremen wear the appropriate flower or flag, has been found to prevent absences on that day. This also helps greatly the work of Americanization, which is becoming increasingly important. Schools for the teaching of English can also be used to advantage and form a bond of sympathy and interest which may be far reaching in their results.

PROGRESS REPORTS

Special Bulletin Boards can be used to show Progress Reports of different divisions as well as attendance records, although these should be handled very judiciously in order to avoid the appearance of attempting to create unhealthy

rivalry or as a speeding-up process, in its undesirable form.

Records of good output from different departments, particularly those which relate to quality of the work done, are sure to be of interest. These can be accompanied by examples of defects which caused the rejection of a part or which made it necessary to have it repaired or done over. Object lessons as to why certain work is bad and what caused it, are not only educational but have a salutary effect in preventing its duplication. A little talk or printed bulletin regarding the cause of the defect, in plain shop language, is sure to be effective.

Exhibits of the work of the company in much the same manner as is done to attract customers always appeals to the men who made it. They take pride in pointing out the parts on which they worked if it happens to be only a small part of the finished product. Lantern slides, showing the product, showing the different offices or branch stores or factories and showing the machines as set up for use in other factories, all instill a pride of accomplishment in those who have helped to produce them. It is also advisable where possible, to have the wives and families attend these exhibits.

Motion pictures suitably selected to show

either the getting of the raw materials used; the use of the finished product; the people who have produced the material with which we work; the users of the machinery, perhaps in far away lands; all tend to tie the organization into a compact group with a group consciousness and a pride in being a part of such an organization.

We are just learning that production extends far beyond the shop walls and that it is just as necessary to keep the minds of the workers occupied with pleasant thoughts as to give him a pleasant place in which to work. This does not mean that the shop should undertake to provide all his entertainment, as this would naturally arouse resentment. But on the other hand his opportunities for recreation have a direct effect on production and on labor turnover and where it is possible to combine instruction and recreation, as is often the case with motion pictures, it should not be overlooked. An auditorium, either in the shop itself or which can be secured when desired for get-togethers of various kinds, has proved an excellent way of promoting the group spirit. The Gisholt Company of Madison, Wis. uses its auditorium to great advantage in this way,

The Gisholt Company also provides a splendid course of instruction for men who desire to become expert operators of their machines, these

courses being open to certain numbers of their own men and also to men from other companies who care to send them for this instruction. This gives other firms an opportunity to extend a rare privilege to some of their own men and there are few cases where the opportunity is not appreciated and where it does not pay big dividends. If, in such instances, there is still a fear that they will go elsewhere afterward, there is usually something wrong with the management of the organization. In too many cases where apparent ingratitude is found, the management has tried to make a few privileges take the place of proper shop conditions or standard wages.

It is impossible in passing, to refrain from commenting on the wonderful spirit of self-reliance and helpfulness which is developed by the Gisholt course already referred to. This is an intensive course with hard work crowded into every hour of the day, and yet the personality of the instructors, the atmosphere which pervades the school, makes its impression on nearly every man who is fortunate enough to take the course. It is another example of the value of having personal relations on a basis of square dealing and trustfulness, rather than of suspicion and distrust.

CHAPTER III

FORGETTING THE HUMAN ELEMENT

Many shop managers are too apt to overlook the fact that the men in the shop are just as much human beings as themselves. Our large establishments, where for convenience in book-keeping we give each man a number, has much to do with this, and as a consequence we think of men as numbers instead of as individual beings. In other cases it is hard for those of us who have come up through the shop to realize how conditions have changed. Some men who have worked their way up through all sorts of adversity can see no reason why men should not work 10 to 12 hours a day now just as they did, and for the same pay. But the measure of a day's work has changed just as has the value of a dollar when measured by the commodity it buys.

The increased size of our shops has made it impossible for the "boss" or "old man" to have the same personal relations as before. But that is no reason for assuming that the men are not as human and as capable of interest as

ever. We were always interested when an order from a foreign country or from a distant state, came into the shop. The same interest can be aroused today if we but try to do so.

In addition to the operations themselves, some of which are of necessity simple and monotonous, there are great possibilities in securing the interest in the business as a whole. And this may easily have a widespread influence on the community, on the whole industry and on the nation.

PREVENT ERRONEOUS INFORMATION

Those who do not believe that workers take any interest in the business side of industry have only to consult the librarians in large cities to see what classes of books are being read. And just as it is the part of wisdom to teach your child the things he should know in the proper manner, so is it better to prevent distorted ideas regarding the running of a business from being absorbed as truth by the workers in your own shop. Is it not better to talk to them frankly about many of the details of the business than to have them get an exaggerated idea of the profits or of their share in producing them?

Much dissatisfaction is caused by men believing that labor is confined to those who work

with their hands, and this has been fostered by the false pride of those who like to feel that they are above those whose work is manual. A little time devoted to showing just what part each kind of work plays in the finished product, will help give a good foundation for future discussions. We can all help to make a much more correct understanding of the real situation by pointing out, with absolute fairness, just the part each plays in the field of productive effort.

We can show the necessity of the first idea of the machine to be built, the making of the design with its modifications so as to make it work satisfactorily and to enable it to be built at a fair price. We can show the necessity of designing special tools, fixtures and gages for its production, the training of men and women for the work, the cost of the equipment, the interest on the investment, the cost of superintendence, the cost of taxes and of fire insurance, the cost of selling the product, the shipping cost and the necessity for a margin to meet emergencies.

While there may be honest differences of opinions as to the relative values of the different kinds of services, the average man without business experience will soon see that he is not versed in the details and that all the work is not done in the shop.

THE INTEREST OF WORKING FOR YOURSELF

The housewife has many monotonous tasks. Washing dishes three times a day, sweeping, dusting, ironing, mending socks, and other duties are not in themselves particularly exhilarating or enjoyable. No intelligent woman could be expected to take a keen interest in them, if the work itself was all there was to it. But these are, in the case of a well-established house, only a part of the story, a mixture of the bitter with the sweet. And while washing dishes does become monotonous, the housewife knows that it is a necessary part of running a house and that she also shares the more pleasant portions of the game of life. She is a partner in the firm and knows that the fewer dishes she breaks, and the more time she gets for other work, the more money they will have to spend for other things.

The kitchen-maid may very easily find the dish washing a drudge's task, while the housewife does not so consider it. The difference lies in the interest of the worker in the household as a member of it. If the maid has no interest beside the usual financial return, she breathes a sigh of relief when the job is finished, just as the man in the shop on a monotonous job looks longingly for quitting time. This is particularly

true of where the work is planned out in every detail and the worker has no voice in the planning.

HOW THE ATTITUDE OF MIND AFFECTS WORK

Just as the housewife does many monotonous and disagreeable tasks joyfully because she has a real interest in the success of the domestic partnership, so the husband does equally monotonous work without a murmur if he too has an interest of some sort in it. If, however, he is only a number on the payroll, an appendage to a machine because he can supply certain movements which are difficult to do mechanically, he is apt to be far happier helping to do the dishes at home, than he is in the shop.

There are several ways of arousing his interest, depending somewhat on conditions in the shop and also on his individual temperament. One is an interest in the work itself and another is an interest in the shop as a whole. Both presuppose a comfortable living wage, while an additional bonus of some sort makes a man feel as though he were really a part of the institution.

The financial interest, however, is by no means the only one to be considered. Neither is it the strongest motive in all cases, assuming of course that a fair living is assured by the regular wage. There is an ever-growing desire on the part of

workers for a voice of some sort in the management of the shop, especially as to working conditions. Nor is this feeling confirmed to the workers. The Babson conference on coöperation which was composed of some 200 employers, representing over 600,000 employees, was unanimous in advocating the participation of the worker in the details of shop management. Autocracy in the shop was declared as much out of date as autocracy in national government, and various plans for securing industrial democracy were freely discussed.

AUTOCRACY OUT-OF-DATE

This does not mean that the management of the plant is to be turned over to the workers, few of whom have ever had any experience in business methods. It does mean, however, that the autocratic and arbitrary making of rules, the discharge of men without reasonable cause, the setting of rates without consulting the workers, are not in keeping with modern methods of shop management.

By giving the workers a voice in these matters, through representatives elected by them, or what is known as shop committees, a new field of interest is aroused, entirely aside from the work itself, and an interest which has a strong

hold on some temperaments. Managers who have tried some such plan are highly pleased with its workings in most cases. It puts responsibility on the men and in nearly every case makes the most radical men more careful and more conservative, less liable to advocate unsound measures.

Committees of this kind are being educated into the fundamentals of doing business and in this way the average worker ceases to expect the impossible in the way of wage and bonus.

OVERHEAD COST NOT APPRECIATED

The average shop man is fairly well posted in the cost of material and labor, but the fact that the overhead charges average one and a half times the cost of direct labor is not appreciated. Nor would it be believed unless backed up by evidence of such expenses as superintendence, rent, heat, power, light, taxes, etc.

A little time spent in explaining the cost of supervision will make it plain that the less the work done needs looking after by the foreman, the less supervision the shop needs, the more can go into wages or bonus, or both. In other words, the more we look on the workers in the shop as a part of the institution, the more they can be made to feel that they are not merely a

part of the shop equipment, but that they are really a part of the organization, the more they will be interested in the work and the less will be labor turnover.

RESPONSIBILITY HAS GOOD EFFECT

It must not be expected, however, that all this can be accomplished without striking snags of different kinds. There is sure to be a few men in the shop who will be thorns in the flesh. They are apt to be skeptical, over-critical and suspicious as to the sincerity of any employer. Unfortunately they too frequently have cause for suspicion. But in most cases this variety can be handled by putting them on the committee or by suggesting that the men elect them. Responsibility sobers the most radical man and they often prove to be the most valuable men in work of this kind.

This sort of industrial democracy is growing in many quarters and in many lines of work, from machine shops to large department stores, and there are few cases where this plan has been abandoned after a fair trial, which speaks volumes.

The way in which responsibility sobers the judgment may be illustrated by the experience of the Filene department store in Boston, Mass.

Every employee of this company automatically belongs to an association which gives him or her a voice in the government of the store. The employees elect a board which passes upon all questions of discharge, should the employee feel that he has not been fairly treated. Every member of this board is an employee and its decision is final. The firm is perfectly satisfied with their decisions. A well-known judge has reviewed a large number of their decisions and has stated that they are as fair as those handed down by the average court.

There is also another instance of careful consideration of the interests of the firm. The question of an extra holiday was under discussion with many reasons why it should have been granted. But, owing to the season it was discovered that it meant a loss in sales which would go to other stores and the employees voted to work instead of taking the extra holiday, although it cut them out of an enjoyable week-end. This is all the more worthy of note because it is the Filene custom to pay full time on all holidays. The responsibility prevented them from deciding in a selfish manner for their own pleasure.

Is it not reasonable to suppose that the average employee in a machine shop will decide as intelligently and as conscientiously as the average

employee in a department store? And can we doubt the effect of such a spirit on the production of the shop?

DEMOCRACY IN MAKING PIPES¹

Another example of industrial democracy is found in the plant of Wm. De Muth & Co. located at Richmond Hill, N. Y., manufacturers of a line of French briar and meerschaum pipes and smokers' articles. The special machinery and processes involved require the services of about eight hundred people.

"Recognizing the imperative need for closer coöperation between employer and employee the company about August, 1917, installed a system of organization government based on the principles of the Constitution of the United States and known as 'Industrial Democracy.' It provides that the legislative body, or Congress, referred to above has, with the confirmation of the Cabinet, the power to enact and enforce all laws, rules and regulations for the conduct of the factory, and its decisions are binding as well upon the company as upon the employees. The Cabinet is composed of members of the executive board, together with the factory and the sales managers, the president of the corporation being its presiding officer.

"The Senate includes the superintendent, the heads of departments and the factory foremen. As this body al-

¹ From the *American Machinist*, by ELLSWORTH SHELDON.

ready existed when the system was installed, the necessity for creating it did not arise, but the constitution provides that changes in the personnel of the factory executives or additions to their number may be made by the legislative bodies. Ordinarily if a new foreman were needed a candidate would be elected by the House, subject to the confirmation of the Senate and Cabinet, but if a man of special or technical training were required and such a man was not available among the employees the Cabinet would submit a candidate from the outside, subject to the ratification of the other bodies.

"The House of Representatives is limited to thirty members who are elected annually at a mass meeting of the employees. As the number employed at present is about eight hundred, one member of the House therefore represents about twenty-five employees. To be eligible for membership the candidate must have three qualifications: First, he must have been in the employ of the company one year or more; second, he must understand and speak English; third, he must be known by all to be 'on the square.' In this application of democratic principles there is no question of equal suffrage as the gentler sex is well represented in both legislative branches.

"Meetings of the three governing bodies are held regularly each week, the Senate being convened at 2 o'clock p.m. and the House at 3:30. The meeting place is a room on an upper floor of the office building far enough removed from the factory to avoid the noise and confusion. The Cabinet meets at 10 o'clock in the morning of the same day. Each house of Congress elects a chairman, or president, and a secretary who keeps a minute record of all proceedings.

"Business is transacted according to the usual parliamentary procedure. Questions of wages, holidays, hours

of work, benefit, etc., come under discussion; troubles or misunderstandings are brought to light and straightened out; new and better plans of operation are discussed and recommended—whether it be improved machinery, tools, methods or men, these bodies of Congress have the privilege of using and do use their brains in the interest of such better service. Committees are appointed by either branch separately or jointly, and there are standing committees on such matters as safety, suggestion, welfare, ways and means, etc., each reporting to its respective appointing body its findings, which are deliberated upon and if found feasible are recommended for enactment into law.

“A resolution by any branch, including the Cabinet, does not become law until ratified by both the other bodies, but when such resolution does become law it is considered a mutual obligation. Suggestions upon any pertinent subject may be made to the Suggestion Committee, which is empowered to make any award they deem suitable up to \$5. If in its estimation a suggestion is of greater value it presents a resolution before the legislative bodies and the additional amount of the award is thus determined. Likewise the Safety and Welfare committees may order minor changes and improvements looking toward the safety of the employee and the betterment of his working conditions, reserving all matters of major importance for the action of the Congress.

HOW DIVIDENDS ARE PAID

“At the expiration of each two-week period the efficiency of the entire shop is determined by the relative value of its output to its cost of production; then an employees’ dividend is paid, the basis of which is 50 percent of the savings accomplished during the two weeks by improved efficiency. If, as was the case when I was present,

the dividend was 16 percent, then each employee receives in a separate envelope marked 'Employee's Dividend,' an amount of cash equal to 15 percent of the wages he drew for that two-weeks' period. The 1 percent reserved pays for an insurance policy on the life of each employee, and the face of that policy calls for an amount equal to the annual earnings of such individual.

"To the leading department for each two-week period is presented a large American flag which is hung in the department, serving not only as an evidence of supremacy, but a constant incentive to further effort and an emblem of patriotism. This flag, however, will not stay in one department without effort on the part of the employees thereof, as unless their lead in efficiency is maintained the flag will at the end of the period go to that department that has succeeded in boosting the record. The first department winning the flag three times is given a supper, the cost of which is liberally shared by the company and attended by the officials.

"As a result of the location and the unsettled condition of the labor market the employees comprise a rather mixed nationality, and until recently the labor turnover at the plant, in common with many other industries, was such as to cause much disquiet, but since the installation of this system of shop government each employee realizes that instead of his being a mere cog in a wheel, to be used or dispensed with at some unknown person's convenience, he has become a useful and intelligent unit of the organization with a voice in its management, something to say about how long and under what conditions his best work can be done and how much he shall receive for it. This has the effect of increasing his self-respect and respect for his job, together with a sense of his personal obligation to his

fellows. It is giving him an insight into the problems that harass his employers and it creates respect for them and makes him willingly share their burdens. Above all it awakens the sense of civic responsibility, inspires him to study our language and our customs, and in that way strikes a blow at what is perhaps the most insidious evil at the root of our republican form of government—the ignorance and indifference of the individual of and to the things that are of vital importance.

THE SYSTEM TEACHES AMERICANISM

“The following is an instance of the way in which the system teaches Americanism. A resolution was introduced and passed in the Congress naming certain days as holidays, and though this list was made up by a body two-thirds of whom were of foreign birth, every day named was strictly an American legal holiday. If an employee should remain away from the factory any day not included among the holidays appearing on the accepted list without reasonable excuse he loses one-quarter of his dividend; if two days he would lose one-half, three days, three-quarters, and if four days he would lose the entire dividend for that period; that is, if he lost four days out of a possible 12 he would lose the dividend that would accrue during the 12-day period. The object of this somewhat drastic penalty is to avoid low production and running the shop shorthanded, which obviously would cut down the surplus available for dividends, and as it applies to everybody, it is therefore fair to all.

“The system was installed by Albert J. Leitch, of Philadelphia, who is an enthusiast on the subject of coöperation. Mr. Leitch does not claim perfection for his method, but he says that it is, like the American Government, the best

there is, and though it has been in operation only a year in the Demuth plant it has already produced substantial results and its advantages are growing more evident each day not only in increased financial returns, but in smoother production."

WORKING OUT A THEORY IN SHOP MANAGEMENT

The changing attitude of shop managers and owners is shown in the view of executives expressed in what follows. The practical application of these ideas shows very clearly in the part which deals with the White Motor Co. This is particularly interesting on account of its utilization of men of over 40 years of age and the way in which the shop is run by committees, giving the men a direct voice in the management.

The majority of the opinions here expressed are those of a careful observer of human nature, a successful manager of a large shop, whose judgment is based on actual manufacturing conditions. Only modesty on his part prevents me from quoting him by name and crediting him with the first part of this section, as I should like to do. The second part comes from a source from which I am permitted to quote only the firm, but not the individuals who have helped to build the system to its present successful stage.

This manager views the question of labor turnover from two angles—that of securing such productive efficiency as will enable a larger return to be given to the worker, and the keeping down of the payroll to please directors who believe this is the only way to secure the largest returns for themselves. Regarding the second point, he makes it clear that whittling down wages does not secure the largest product from the equipment because there is no incentive to further efforts. In fact, wherever piece rates are cut when wage earnings exceed a given amount there is a distinct effort to keep down the output.

LABOR TURNOVER KEEPS DOWN BOTH PAYROLL AND PRODUCTION

In the same way a large labor turnover enables a goodly proportion of those on the payroll to remain at the minimum wage, and this is probably one of the reasons why excessive labor turnover has not been more strongly objected to in the past. With a small labor turnover we have a comparatively constant body of men, and in such cases it becomes necessary to increase the daily or hourly rates occasionally, if not regularly, which is not very pleasing to some types of shop managers.

If it means anything to a firm to be able to point with pride to men who have been with them for many years it means that the fact of their working in the shop so long a period is an asset to the company and consequently it has a cash value. For there are other factors besides actual output to add to a man's value. Dependability in emergencies; care of machines and of products; effect on the men, as well as other things which are difficult to measure in dollars and cents, all have real value to a concern and add to the cash balance at the end of the year.

On the other hand there are men in every concern who could well be spared, yet ties such as long service and others prohibit their dismissal unless it is desired to violate the rule of fair play and cause an actual loss owing to its impression on the other men. When an efficiency engineer undertakes to rejuvenate an old shop he generally begins by making a clean sweep, especially of the heads of departments. This course also has its disadvantages, as many a shop which has suffered from the effects of an incompetent systematizer has found out to its sorrow.

HOW THE WHITE MOTOR COMPANY DOES IT

Coming now from the theories of this careful observer to a concrete example of what one large

firm has been doing along similar lines, it is interesting to note that some very advanced ideas of equitable relationship toward the men are being carried out in a number of cases.

The work which the White Motor Co. of Cleveland has been doing for a number of years in this way is highly interesting and might almost be called revolutionary by the reactionary manager. Some time ago those in charge of the employment of men noticed that, in common with almost all large manufacturing concerns, the average age of their employees was very low—about 26 years, according to the statistics gathered. In some larger shops it is even lower, and this alone accounts in all probability for much of the labor turnover. The spirit of change and unrest is usually much stronger at this age than later, due in part to the desire for more experience, which is a very good trait, but does not assist large production while the changes are going on.

Beginning about three years ago the White Motor Co. decided to raise the average age of its employees, and, reversing the policy of Dr. Osler, which has done the machine-manufacturing industry so much harm and has worked such cruel hardships on many perfectly capable men of middle age, it now gives preference to men over

30 years of age. Needless to say the company does not chloroform him when he reaches the age of 40 years.

Continuing this feature the White company has gradually increased the average age of its employees to about 40 years, and at the same time the production per man has increased in a most interesting and hopeful manner. Part of this increase is due no doubt to the fact that the company has reduced its labor turnover very materially, the average being between 3 and 4 percent a month, and this was in spite of many of its men being called to the colors. Along with this the number of absentees from the shop during working hours has been considerably reduced. This of itself is a highly desirable accomplishment.

Realizing that proper wages and good shop conditions were the two prime elements in the successful handling of labor, the management has grappled firmly with the problem and is endeavoring intelligently to meet the changed conditions of living and of ideas. A careful study of the cost of living in Cleveland showed the increase since 1914. With this as a basis the weekly wages have been increased to equal the increase in living cost. The interesting point is that although the wages have about

doubled, the actual cost of production has been increased very little.

The shop is managed through committees, and here is where the older men are particularly valuable. Their experience, extending back over many years in the shop, makes a most effective balance wheel and aids greatly in securing a safe interpretation of the newer ideas and methods of management. The younger men prevent the management from staying in a rut, and the older men keep the changes within commercial bounds.

Everything is done to make the men feel that they are a part of the institution and not mere cogs in the machinery. The employee is given an opportunity to express himself through shop committees which are elected by the men of the different departments, one man representing approximately ten employees. These committees, which change monthly on the rotary system, meet every alternate week and shop conditions are discussed. The meetings have brought about many improvements and have been profitable to the men and the company. A spirit of friendly interest pervades the whole establishment, and this without any of the paternalism that frequently mars so many well-intentioned plans.

A COÖPERATIVE STORE

The men run a coöperative store in the shop, hiring their own clerk and directing it by a committee chosen from among themselves. The company furnishes the necessary space rent free. For the present the store confines itself to selling cigars, candy and the smaller commodities.

The company runs a splendid kitchen conducted by competent people, which supplies all or part of a meal at cost or less. The meal includes soup, sandwiches and fruit. Some idea of the popularity of the kitchen may be had from the fact that during 1917 it served 599,280 sandwiches, an average of 2600 a day. The daily average for soup was 1375 bowls; for coffee, 1103 cups, and for milk, 625 bottles. The average monthly income was about \$5000. About 215 office employees are fed in the dining room.

All kinds of healthful activities are encouraged. A band of 40 pieces composed entirely of employees gives a concert in the corridor every Wednesday noon. There is also a glee club and a stringed orchestra. There were two baseball clubs during 1917, which won the city championship, a soccer football club and a ladies' bowling club.

Notwithstanding these features, the management however believes, as stated before, that

right wages and proper shop conditions are the first considerations.

No women are employed in the shop, except in the upholstering department, but they fill many office positions.

Perhaps the most startling feature of the management program is the method of increasing wages with fair regularity. The theory is that a man should become more valuable the longer he is with the company. With this as a basis the foreman who does not recommend his men for a raise every six months is called into the office and asked for an explanation. This procedure is so contrary to the usual one of admonishing a foreman for suggesting an increase that it seems almost unbelievable; yet the plan is working out very satisfactorily.

Here then is a clear indication of the trend which is making management more and more a truly scientific problem. The new methods of management must constantly recognize the individuality of the men and must realize that they are in no sense a part of the machine equipment, as they are considered by some of the so-called systems of management. Just how far these ideas can be carried out in other shops depends on divers conditions; in any event they are an inspiration to those who are looking for newer and better shop relations.

CHAPTER IV

SECURING INTEREST BY INSTRUCTION

The following suggestions as to methods of interesting the employees in various plants are based upon hints from the experience of Robert B. Wolf. His work has been among pulp and paper mills so that his plans must be modified to some extent for machine shop work. As will be seen the method is based upon a systematic effort to educate the workers in the theory as well as the practice of their occupation, and in this way differs from much that has been previously done in modern shops. It has, however, the sound basis that no one can be interested in things which they do not understand, and is absolutely opposed to the plan which makes employees merely automatons or appendages of a machine of any kind.

An excellent method of arousing interest in the individual is to make him see his relation to the rest of the shop, and the part he plays in the group as a whole. This is one of the reasons that the working of men in teams is beneficial in several ways. The group or team makes it very evident to all that no one member is independent

but that all depend on each other. The man with an extremely individualistic nature soon learns that he cannot hold himself aloof from the rest but that all must do their share and do it at the proper time, to secure the maximum output.

Team work shows every man in the group the necessity for coöperation. A spurt on the part of one and a lagging on the part of another, both interfere with securing the best results. These practical examples of the benefits of coöperation help in making each man a better citizen as well as a better man for the organization.

The group or team plan can be used extensively in securing both quality and quantity and is much better in every way than inciting individual competition. When the completed product depends on the work of ten different teams or groups, it is easy to inaugurate a friendly rivalry just as exists between football or baseball teams.

AVOID OVER-SPEEDING

Care should be taken, however, to avoid undue stimulation, as excessive speeding up is sure to have its reaction. There is a limit to the rate at which men and women can work economically for the firm, for themselves and for the community. Special spurts can be made when occasion really demands it, but it does not pay to set too

hard a pace as a standard to be lived up to day after day. It is far more important that every one of the ten teams show a good average output than that one or two make an excessive record and three or four others fall behind the average.

The safest sort of stimulation is that of quality rather than quantity. Mr. Wolf found this of the greatest value in his work in the pulp and paper mills. The desire for quality records led the men in various groups to suggest means of testing quality and they were encouraged to work out new methods of securing it. The men also had a hand in determining the quality, one of their own number being chosen to help make the tests.

Team records for quality and for spoiled work can be posted with less danger of hard feelings than in the case of individuals. And it can be safely left to each group not to let the guilty member or members forget who is responsible for the low records.

ENCOURAGE MEN TO LEARN OF THEIR WORK

The fear that men will learn the reasons for shop processes and methods, and so be able to take this knowledge to other shops, has caused some to try and prevent men from knowing what

they are doing. In heat treating for example, the recording pyrometers are sometimes placed in a locked room and only signal lamps used at the furnaces. In other words, the men who actually do the work, know nothing of the real process, only that a red light means too hot or a blue light too cold.

This method can hardly hope to secure or to hold the interests of men who are worth while, or who have the capacity to be of great value to a plant. We must make up our minds that before men can be really interested in their work, they must know the whys and wherefores of it all; they must know the "why" of the various operations as well as "how" they are performed. No one can be interested in work he does not understand, nor can he aid in solving the problems as they develop. We must teach them how to do the work well, the results to be obtained and why we think our way is best. And we must realize that unless our employees are worth more to us than to anyone else, it is probably because we have not utilized them to the best advantage. It is well to consider how much it would cost to train a new man, with the chance of having to train two or three before securing the right one, before deciding that we cannot afford to pay more than a certain fixed wage. Not only must

the cost of hiring and firing be considered, but also the value of the experience, the loyalty and the possibilities of valuable suggestions.

CONFISCATING INVENTIONS DEMORALIZING

The handling of suggestions is a matter which may mean much or little according to the methods employed. The practice of some concerns of confiscating every invention of their employees in consideration of a dollar or maybe ten, cannot possibly secure loyalty or good feeling. An adequate return will prove a good investment in every case. In the same way, a system of fair and just remuneration for suggestions which save money for the firm, is sure to pay a big dividend. A royalty is much better than a lump sum, because this pays more in accord with its value and it also stimulates the interest of the whole force over a long period.

Having decided on the plan of stimulating the interests of employees, the next step, and by far the harder part of the proposition, is to decide how this can be done. The experience of Robert Wolf, who will be quoted quite extensively in a later chapter, is of value as he was successful to a marked degree. And the basis for his success seems to be in teaching the workers the reason for each step in the process, the effect

of different methods, and all the fundamentals of the portion of the industry in which they are engaged. This is much more difficult than to plan out a set of rules or a sequence of motions to be automatically followed. But it is also of much more value to the industry, to the man and to the community.

Arousing the interest of the worker in his work is of prime importance and it will pay to devote considerable time and ingenuity in devising ways and means of doing it, not to mention the time to be spent after the way has been discovered. There are few jobs where at least some interest cannot be aroused either with the operation itself, the machine or tools with which the operation is performed, the part the operation plays in the finished piece or some of the history of the product and its distribution.

First we must get rid of the notion that the only thing the worker should do is to turn out as much product as possible (although this can of course never be lost sight of), and that nothing else is any of his business. Then we must find the easiest point of interest which will at the same time add to the man's knowledge and have a bearing on his work. For we must not forget that we all have a duty in the training of as many men as possible, while not interfering

too much with our production. The need of skilled men has been clearly shown during the past two years.

THE SNAGGING GRINDER

Running a plain, snagging grinder in the foundry can be perhaps, one of the most uninteresting jobs to be found, but it is not hopeless.

First teach the man the necessity for wearing goggles to protect his earning capacity for his family as well as for his own comfort. Second, the need of his own special goggles for sanitary reasons. Third, that the wearing of goggles is a duty to the community as men with impaired sight or blind are apt to become a charge on the city, hence the community has a right to insist on his taking care of his eyes.

The advantage of having the grinding wheel kept true; the disadvantage of using a wheel that is loaded or glazed; the difference between the two; the fact that the grinding wheel is made from a mineral or from the product of an electric furnace, as the case may be; the way in which the crystals are held in a bond; the fact that a wheel is really a revolving cutter with thousands of cutting points; the reasons some grades and grains cut better and stay sharp longer; the best speed to run the wheel; some

idea of the power required; perhaps a notion of where the power comes from, and similar points can be used to get some sort of interest in the job itself. Perhaps pictures, either stereopticon or motion pictures showing how these grinding wheels are made, may make a lasting impression. If it does it means more and better work, together with better care of the wheels. Perhaps none of these may appeal to all men but there is some way unless they are of low mentality, and it will usually pay to find it.

LOOK FOR INTEREST IN ALL OPERATIONS

If there are as many possible channels of interest in a foundry snagging wheel, how many more are there in other jobs. The common drill press affords a number when the question is carefully studied.

This work may well be placed in the hands of a good man with imagination and human interest and he will work out a plan which will be sure to appeal, in some way or other, to all of normal mentality. The others must be led as best we may, but they rarely object to the more monotonous occupations.

THE HEAT TREATING ROOM

We have already referred to the Heat Treating Room and as it affords a good opportunity for

interesting any live man or woman who works in it, it makes a good starting place for suggestions, along the lines practised by Mr. Wolf in his pulp and paper mill work.

Many experienced men who have good success in this work, depend in many cases entirely on their sense of sight for the results obtained. Some of these oppose the use of such instruments as pyrometers, in the hopes of keeping the work more or less of a secret. The more progressive men and nearly all the modern plants, however, have a full complement of such instruments, knowing that this is the best way to secure uniform results.

With the recording pyrometers in full sight of all the furnace workers, they can see exactly what is going on all the time and can also know what has happened during the previous shift. This is the best kind of educational work, especially when someone will point out just the effects of the different changes in temperatures on the work; the results obtained with different qualities of steel; the variations necessary to secure the desired results; the effects of different methods of quenching, can all be made interesting to almost any type of worker, if presented in the right way.

The effect of all this on the quality as well as

on the quantity of the product can be clearly pointed out. Its effects on subsequent operations, if any, is also of interest, and shows how the success of one department, depends to some extent at least, on other departments.

VALUE OF EXAMPLES OF WORK

In the same way, the workers at the heat treating furnaces can be shown how the previous annealing and forging may affect the quality of the work they do; how over-heating the steel for forging or how forging it when too cold, will make it impossible for them to secure good results, at least by their regular treatment. If the work can be saved by special treatment, this also affords an excellent example for educational treatment and one of the best opportunities for arousing interest in the work.

Samples of the work, broken to show fractures, just as is done in test rooms and in similar places, will do much to make men feel that they are a real part of the plant, that their work is vital and necessary and they really belong to the "family" which constitutes the organization.

A thoroughly equipped heat treating room affords an excellent opportunity for trying out an experiment of this kind. It requires the right kind of leadership, which should come through

the employment manager's office, but with this leadership, it can be made attractive, because it offers every man an opportunity to learn to be a better workman as in the days of the old-time apprenticeship. And if one department can be made interesting, it will effect all the rest and the others will suggest means of making them of interest also.

One thing is certain, we cannot hope to keep men interested unless they have an intelligent understanding of the work they are doing. Ignorant routine and interest do not go together.

Mr. Wolf also found progress records of great value in stimulating interest as well as production. These were, however, records of quality rather than quantity and had a better effect on that account. They did not try to show which could do the most work, but which could turn out the best.

These records also give the men a chance to compare the quality of the product with the performance of the furnace, and to see at once the effect of irregular heating.

It requires little imagination to see how this heat treating department could be made intensely interesting to any normal man or woman with a little guidance of the right kind. It is, however, more difficult in other departments and

it is quite a problem to know how to handle lathe work, bolt cutters and other similar work so as to make them interesting. And yet, this must be done if we are to work out a plan which will be all we desire.

MAKING THE MAN MORE VALUABLE

Instruction in the use and care of instruments, and at the same time on the effect of temperature changes on the work in hand, must be done by some one who understands how to make such matters clear to the kind of men we employ in these particular jobs. The instruction cannot be too technical in the beginning and the work in fact, requires considerable tact and much skill as a teacher.

Some may object to giving time for Kindergarten lessons in heat treatment and pyrometers, not realizing that instruction of this kind may pay far better dividends than to merely teach the men to watch for red, blue and white lights. But the more knowledge of the fundamentals of any branch of the industry we can get into the minds of the men, the more intelligent work we shall get and the less will be our expense for labor turnover and for unsatisfactory work. And, more than this, we shall build up a corps of

loyal helpers which is the greatest asset any business can have.

There are many ways in which information can be imparted but we must not forget that the greatest appeal can be made through the eye. Pictures, sketches and diagrams make an impression which cannot be had in any other way, especially when used by an intelligent and sympathetic instructor.

The motion picture is bound to become a great factor in all work of this kind and has already been used very successfully in teaching different phases of munition work. Lantern slides of the stationary variety, or "stills" as we call them in these days, can also be used to advantage. Both can be used to show operations and the way in which work and the pyrometers should be handled.

It is not enough, however, to tell these facts to a boy or inexperienced man or woman. Care must be taken to see that they understand what is meant and also understand the reasons behind it.

The foreman who is an executive with production his main object, is not the man to be bothered with this. He seldom has either the time or the experience to do the job as it must be done for best results. It requires someone with the teaching instinct. The vestibule or

preliminary training school is a good place to make a beginning, but in most cases the work must not stop there. Not a week should go by without some effort being made to increase the knowledge or at least to maintain the interest of the work.

The use of heat indicating and controlling instruments is sure to interest anyone of ordinary intelligence. The construction of these instruments, the way in which they work and their proper care are also features which will not only secure interest but will greatly increase the service to be obtained and reduce the cost of repairs. The mere taking of an interest in the instruments will be reflected in the quality of the work, and quantity will take care of itself.

These efforts need not all be technical or strictly relating to the individual job. They can relate to the shops as a whole, or to the industry and the community.

THE ENGINE LATHE

One great reason the old-time machinist took an interest in his work, was because he understood it, because he knew the "why" of every machine in the shop. One way to interest the present-day shop man in his work is to see that he too

knows the reasons behind the work he does every day. In other words, he must be taught more about the job than the mere pulling of a lever if he is expected to be keenly interested in it.

This means the teaching, in as simple a manner as possible, of the fundamentals of the lathe, the drilling machine, the miller, the planer and shaper, and the grinding machine. It means that instead of being satisfied when we have taught a man how to do a single operation, we must show him why the various things must be done in a certain way. We must not merely tell him to keep the center holes in a bar clean, but we must show him how the work cannot run true, unless he does. And further, we must show him how this affects the work, how it makes additional work for the grinder, how it may easily cause the rejection of a piece, if the error is too great.

Much of this can be taught with almost no loss of productive time, and it not only helps interest the man, but it also makes him more available for other kinds of work when occasion demands.

One of the important factors in arousing interest in work of various kinds, is to show the connection of each operation with those which

follow it. In engine lathe work, there are perhaps five stages in bar work:

Cutting off

Centering and countersinking

Rough turning

Finish turning or grinding

Thread-cutting.

Care in cutting off to accurate length, helps all the succeeding operations. Time lost and work spoiled as the result of this can be easily shown—likewise the time saved in “good work” which goes upon the right side of the ledger.

Centering and countersinking are also important and affect the finished work. The boy on the centering machine can be shown the necessity for accurate centering and also the advantage of uniform depth of the countersink. The lathe hand should also understand the importance of the lathe centers and the necessity for keeping them clean and well lubricated with heavy oil or white lead. Failure to keep the center hole clean causes the work to run out of true so that it is slightly eccentric when run with clean centers. This means more work for the grinder, if the work is to be finished by grinding.

If the grinding allowance is small, the work may fail to clean up on one side. The necessity of accurate centering and clean center holes and

centers, also applies to finished turning and thread-cutting. Thread-cutting can always be made interesting if the fine points are made clear to the worker. The principles of change gearing, the depth of threads, the use of double and triple threads, thread measurement, etc., can all be used to secure and maintain interest in the work.

These are merely suggestions which can be enlarged to include most machines in the shop.

CHAPTER V

INSTRUCTION IN THE SHOP

Few of us realize the difference between the old days of apprenticeship and the present. True the apprentice spent much more time than was necessary in the actual learning of the trade but he was absorbing a fund of general information which showed him the interesting side of the machine industry. He became familiar with many kinds of work and learned the "why" of all the machines in the shop. He learned how patterns were made from drawings, how castings were made from patterns, how machine forgings were made and how tools were forged and tempered.

Today the average operator knows nothing but his own machine and in many cases is only taught how to put a certain kind of work in the machine and perform one operation on it. It has not been considered necessary or desirable to teach him more and no one has time if it were. The foreman can no longer be a teacher, and this is perhaps as well in most cases.

Special instructors are used in some shops, particularly railroad shops, and these do re-

markably good work not only with apprentices but with adult operators. This works well in the railroad shop where the work is seldom so specialized as in large manufacturing and it gives therefore a greater variety which means increased interest on the part of the worker.

Some railroad instruction systems put the apprentice as a helper in the erection gang with a view of giving him a general idea of the work first. This shows him where the different parts belong, shows the necessity of good work in different places and makes it much easier for him to grasp the different kinds of work as he comes to it.

This may not be feasible with operators hired for one specific operation. But there can be no doubt as to the advantage of giving the average man or woman in the shop an opportunity to know more of the product than they can see or learn on their own operation. Many advocate the teaching of several operations so as to allow a change to relieve monotony. Some of the large shops, however, such as the Packard Motor Car Co. and others, have found that it pays to spend a little time in training both men and women before they go into the shop at all, and this no matter what department they are to go into in the shop.

The object of this training or vestibule school is not only to make them somewhat familiar with the work they are to do, but to give them a sort of general knowledge of shop work as a background on which to build their special training. And this training school stands ready to assist any of the workers after they get out into the shop. This gives the workers a feeling of human interest and of sympathy which cannot fail to have an effect in creating interest and loyalty, which benefits both the worker and the company.

THE PACKARD TRAINING SCHOOL

A description of this school and the methods employed may be of service in suggesting modifications to those who do not feel that this plan exactly meets their requirements. It is, however, well worth a careful study as it has worked out very successfully in this case.

An extensive study of the methods of preliminary training necessary to fit women for work in the various departments of the shop has been made by the Packard Motor Car Co. of Detroit. It may not be out of place to state that the same methods are being used to train men of similar limited experience, but as the women predominated in about the proportion of 190 to 30 when

this was written, it may well be called a training school for women. More men are now being trained in the same way.

This school has been worked out as a part of the employment-management system of the Packard Co., which is in charge of E. A. Dryden, the employment manager. The training school was originated by the general superintendent, D. G. Stanborough, and is under the direct supervision of W. J. Hammond. The school has a faculty of 50, not including foremen, assistant foremen and instructors, and is giving instruction in practically every line of work done in the factory.

One thing that the ordinary woman now coming into the factory does not realize is the importance of time. Everything connected with quantity production or with the work done and all operations provided are regular production work that is run on the same premium times as in the factory. This is done so that the students will understand the premium system used throughout the factory as well as realize that the element of time must be considered in everything they do.

Those in charge of the school have found by trial that the best results are obtained on machine and assembling work by having one instructor

to every three students and in some cases one to every two, although on the elementary instruction one instructor to every six seems to work satisfactorily.

After the students complete the elementary instruction and pass the examination in it they are furnished with two one-piece khaki uniforms, which are charged to them the same as their tools and which are returned to the company stockroom upon leaving the employ of the company. The employees may launder these uniforms themselves or turn them into the garment stockroom in exchange for clean ones, where they will be laundered by the company at no expense to the student. These garments are all kept in the work-garment stockroom, where they are fitted to the employees by expert fitters.

The class of girls working in the Packard shops and in the school was exceptionally good, many having high-school and college educations; there are also a goodly number of schoolteachers who deemed it their patriotic duty to go into the factory to work, thereby releasing men for military service.

The school is equipped to turn out 120 students a week and the company had approximately 2000 female employees working throughout its factory. Each girl upon completing her course

in the school is presented with a silver graduating pin, Packard trademark, and the words "Packard Training School" on the pin.

The different courses taught were machining, welding, assembling, tool-crib work, clerical, inspecting, bench work, service-repair work, stockkeeping and stock tracing.

THE STANDARD COURSE

The standard course in the preliminary, or vestibule, training school varies from seven to sixteen days according to the department to which the learners are to be transferred for actual work. A schedule of the training time for the different departments is shown in Table I.

It will be noticed that in each case two days are devoted to elementary inspection, this having been found to be the best way of getting the women accustomed to the shop surroundings and the work to be done as well as teaching the fundamentals of measuring. This preliminary work is accomplished at suitable benches at one end of the school shop, and everything is done to make the beginners feel at ease in their new surroundings.

TABLE I.—TIME OUTLINED FOR STUDENTS IN GIRLS' PREPARATORY SCHOOL AND DIFFERENT OCCUPATIONS TO WHICH THEY CAN BE TRANSFERRED

Occupation	Time days
Engine-lathe operators:	
Elementary inspection.....	2
Engine lathe.....	8
	—
	10
Milling-machine operators:	
Elementary inspection.....	2
Plain milling machine.....	6
	—
	8
Hand-screw machine operators	
Elementary inspection.....	2
Hand-screw machine.....	7
	—
	9
Barber-Colman gear-cutting machine:	
Elementary inspection.....	2
B-C gear-cutting machine.....	7
	—
	9
Hand-milling machine:	
Elementary inspection.....	2
Hand-milling machine.....	6
	—
	8
Sensitive drill-press operators:	
Elementary inspection.....	2
Sensitive drill press.....	5
	—
	7

TABLE I.—(Continued).

Occupation	Time, days
Heavy drill press:	
Elementary inspection.....	2
Heavy drill press.....	5
	7
Multiple and radial drill:	
Elementary inspection.....	2
Multiple and radial.....	6
	8
Tapping-machine operator:	
Elementary inspection.....	2
Tapping machine.....	5
	7
Toolgrinding-machine operators:	
Elementary inspection.....	2
Universal grinding machine.....	6
	8
External grinding-machine operators:	
Elementary inspection.....	2
External grinding machine.....	5
	7
Internal grinding-machine operators:	
Elementary inspection.....	2
Internal grinding machine.....	5
	7
Splining machine operators:	
Elementary inspection.....	2
Splining machine.....	5
	7

TABLE I.—(Continued).

Occupation	Time, days
Lo-swing operator:	
Elementary inspection.....	2
Lo-swing lathe.....	7
	9
Fox lathe operators:	
Elementary inspection.....	2
Fox lathe.....	6
	8
Potter & Johnson operators:	
Elementary inspection.....	2
Potter & Johnson.....	7
	9
J. & L. operators:	
Elementary inspection.....	2
J. & L. machine.....	9
	11
Broaching machine operators:	
Elementary inspection.....	2
Broach machine.....	5
	7
Inspection:	
Elementary inspection.....	2
Practical inspection.....	8
	10
Bench work:	
Elementary inspection.....	2
Bench work.....	8
	10

TABLE I.—(*Concluded*).

Occupation	Time, days
Major assembling and dynamometer test:	
Elementary inspection.....	2
Major assembling.....	7
	9
Minor assembling:	
Elementary inspection.....	2
Minor assembling.....	6
	8
Welding:	
Elementary inspection.....	2
Welding.....	14
	16
Stock tracers:	
Elementary inspection.....	2
Stock tracing.....	6
	8
Tool-crib attendants:	
Elementary inspection.....	2
Tool crib.....	6
	8
Foremen clerk:	
Elementary inspection.....	2
Clerking.....	5
	7
Soldering:	
Elementary inspection.....	2
Soldering.....	5
	7
Stockroom clerk:	
Elementary inspection.....	2
Premium and production clerks:	
Clerking.....	10

The elementary inspection course outlined in Table II, consists of learning the use of measuring tools, such as scales, micrometers, calipers,

TABLE II.—THE EIGHT STEPS IN TEACHING INSPECTION

	Hours
Inspection Lesson No. 1:	
Measuring pins and block with scale and marking sizes on blank blueprint.....	3
Inspection Lesson No. 2:	
Measuring plate and holes in plate with scale and calipers and marking sizes on blank blueprint.....	1½
Inspection Lesson No. 3:	
Using scale for measuring plate and thread pitch gages and scale for measuring threaded holes in plate and marking sizes on blank blueprint.....	1½
Inspection Lesson No. 4:	
Using scale and thread pitch gages for measuring threaded plugs and marking sizes on blank blue- print.....	1½
Inspection Lesson No. 5:	
Measuring pins with snap gages and marking sizes on blank blueprint.....	1½
Inspection Lesson No. 6:	
Measuring pins with snap gages and marking sizes on blank blueprint.....	3½
Inspection Lesson No. 7:	
Measuring bevel gears with protractor, scale and calipers and marking sizes on blank blueprint.....	1½
Inspection Lesson No. 8:	
Inspecting test shaft with gages used on all previous inspection points; also marking all sizes and notes on blank blueprint.....	4
Total.....	18

depth gages, bevel protractors, thread-pitch gages, radius gages, etc., and the reading of blueprints. This is accomplished by a combination of blueprints and the articles themselves, some of these being shown in the illustrations.

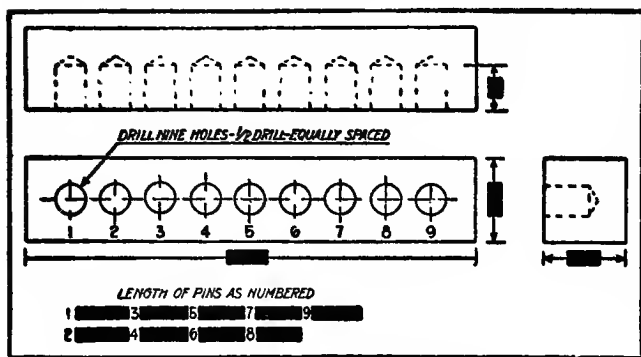


FIG. 1.—Teaching use of scale.

Fig. 1 shows a metal block with nine $\frac{1}{2}$ -in. holes equally spaced and drilled to a uniform depth, which the student is required to measure.

LEARNING TO MEASURE

Each block is fitted with pins of varying lengths, the variation being in even eighths, sixteenths, thirty-seconds and sixty-fourths. This lesson involves only the use of the scale, as the diameter of the pins is not considered, but only the various

dimensions of the block and the length of the pin. A blueprint is provided with blank spaces

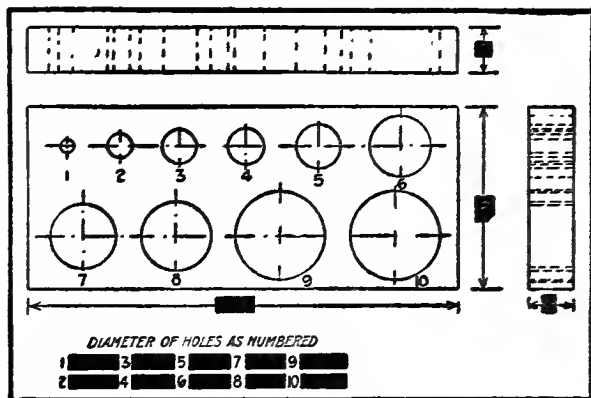


FIG. 2.—Using inside calipers.

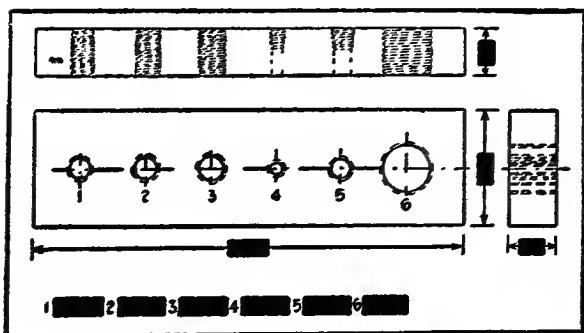


FIG. 3.—The thread-gage lesson.

for each measurement to be made, and this answers the double purpose of making it easy to

put down the answers and to familiarize the new student with blueprints and drawings.

Lesson No. 2 involves the use of the scale as before and also the inside caliper, as the dimension of each hole is called for in the blank places shown (see Fig. 2). The use of thread gages comes next, these being simply for determining the lead of the screw. This is shown in Fig. 3,

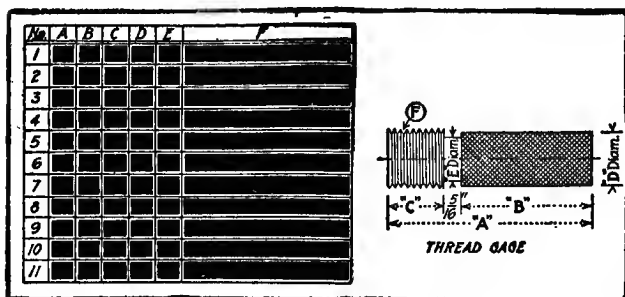


FIG. 4.—Measuring plug thread gage.

the plate having four holes tapped straight through and two holes with a tapered thread. More complicated measurement is taken up in lesson No. 4, which is a plug thread gage, Fig. 4, and on which six separate measurements are taken. A number of different thread plug gages or plug thread gages are used in this lesson, a blueprint providing for 11 such gages should it be desirable to use this number.

USING THE MICROMETER

The blueprints for lessons 5 and 6 are shown in Fig. 5. In addition to the blueprints there is a block containing 10 sets of three plugs each, every plug being numbered and lettered according to the designation shown. The student here

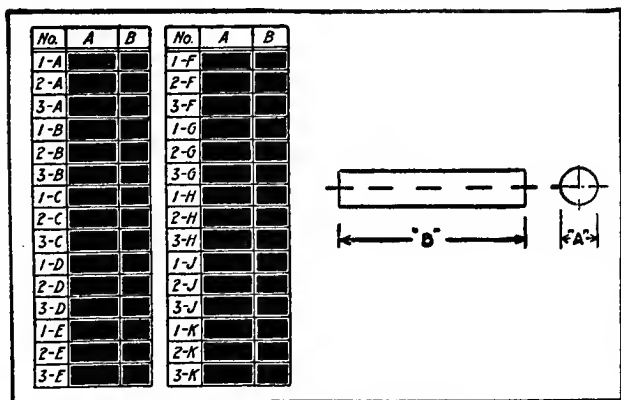


FIG. 5.—Measuring with micrometer.

learns to use the micrometer in a practical way. One of the plugs of each set is the standard size for that set, and the other two vary by a thousandth of an inch in each direction; that is, one plug is a thousandth of an inch too small and the other a thousandth too large. In this way the student learns the functions of the micrometer and how to use it, becoming more or less familiar with it

A COMBINATION MEASURING LESSON

The last lesson is a combination of all the others and is a very complicated one for a beginner, as can be seen from Fig. 7. This is measured in 39 places, and blanks are provided on the blueprint for each dimension. Included in this is the measurement of counterbores, tap holes, beveled-gear

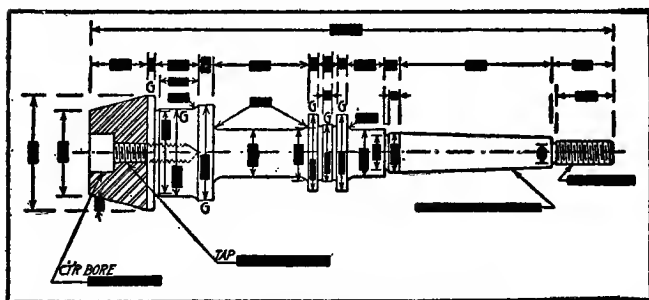


FIG. 7.—Last lesson for beginners.

angles, diameters at the bottom of grooves and at the outside of shaft and collar, the width of collar facing, radii, as well as the measurement of a taper shaft and the length of various portions of the shaft, which must check up with the over-all total. It is safe to say that anyone who can measure a piece of this kind correctly must have some understanding of the use of the various kinds of measuring instruments used in the shop.

The work also gives a fair grasp of the necessity of turning out accurate work on the machine and in general familiarizes the learner with some of the problems she will face when she begins production work.

After the women have mastered all the lessons of elementary inspection they are put at machines, also in the training school, and given the necessary instruction before going out into the shop on production work. The average time required for the various machines is shown in Table I, and it is gratifying to know that after going into the shops nearly all of them are making good. Where special coaching in certain lines is necessary it is given by competent and sympathetic instructors, and the foremen throughout the plant are coöperating to the full. The instructors in the training school are mostly women who have already become expert operators, some of these being shown in the headpiece attending a class in shop mathematics which is a part of the instructors' course. The instructors are also taught the elements of mechanical drawing so as to enable them to read blueprints quickly and to explain them to the new students who are constantly augmenting the ranks.

One of the most interesting sections of the training school is that devoted to showing the

learners how to assemble and repair Liberty motors. They take the engines down, examine the various bearings and other parts, reassemble them, learn how to set the timing gears for the motor and for the machine gun and otherwise to become familiar with the motor. They then have the satisfaction of seeing the motor run, this being proof that their assembling and timing have been correctly and satisfactorily done.

The atmosphere of the place is very pleasant, which no doubt has much to do with the general success of the school itself.

WOMEN IN GARAGE WORK

In addition to training women for the Packard shops they were also successfully utilized in the service garages of some of the Packard distributing agencies. In looking after repair details, from checking the cars into the station to that of seeing that everything is right before they go out. In the beginning they wash and polish cars, clean motors and parts, keep track of stock, check out tools and similar work, these often being done much neater than they were ever done before. They are also being prepared for heavier repair work by brief tutoring or acting as substitutes for skilled men. As a mechanic's helper a girl usually becomes capable of disassembling cars

and trucks or their units in two weeks' time. The oiling and greasing, adjusting and repairing of springs, snubbers and shock absorbers, tire service and repairs, tramming and adjusting front wheels, adjusting brakes, adjusting valves and tappets, scraping and cleaning carbon, light tuning up of motors and many similar tasks are being satisfactorily mastered in from one to three weeks' instruction. Other repairs, such as to upholstery and radiators, are learned in a remarkably short time.

General views of the school are shown in the headpiece, where is the elementary inspection room, and in Figs. 8 and 9 which show the milling machines, lathes and drilling machines. Those in striped uniform are instructors, and a class of these is shown in the tailpiece being taught shop mathematics as a part of their course. They become very proficient and are thoroughly interested in their work.

AN INTENSIVE COURSE IN FUNDAMENTALS

The shortage of skilled labor will never be successfully overcome until a foresighted policy has been adopted by all manufacturers. In all the agitation regarding labor turnover and amid all the accusations regarding the stealing of men by competing employers we hear very little



FIG. 8.—The milling machine room.



FIG. 9.—The lathes and drilling machines.

(Facing Page 80)



FIG. 10.—General view of school shop.

about efforts to increase the supply of trained labor. The reaction from the old apprenticeship days still exists in most places, and too many manufacturers are still perfectly willing to let the other fellow train his men, depending upon inducing them to leave later. There are of course several notable exceptions to this, but they have not been sufficiently numerous to greatly increase our supply of skilled mechanics and they have altogether failed to keep pace with the new demands. The sudden expansion of the automobile industry inaugurated the first great labor-stealing drive, and the demands of the past three years have added fresh laurels to the record of unstable labor. But in spite of all the present needs comparatively few seem to be seriously considering the training of new men instead of devising ways and means of getting them away from some other manufacturer. Needless to say this does not add to the productive capacity of the country, but actually decreases it, besides adding to transportation and housing difficulties.

Among those who are attacking the problem from its proper end and who see the necessity and the advisability of building up a working force of their own is John C. Spence, superintendent of the Norton Grinding Co., Worcester,

Mass. Realizing the scarcity of skilled mechanics throughout the country and the necessity of increasing the supply in the shortest time, Mr. Spence some time ago—December, 1915, to be exact—organized a shop training school with an eight-weeks' course, and it has proved so successful that it has been enlarged several times.

Realizing that the foreman in the modern busy shop has little time for instructing green help he started a separate training school, or shop, comprising over 6000 sq. ft. in the gallery of one of the buildings. It has its own toolroom, wash-rooms and toilets, is entirely separate from the rest of the shop and contains the following equipment:

17 lathes	3 upright drilling machines
2 vertical milling machines	2 sensitive drilling machines
3 horizontal milling machines	1 floor grinding machine
1 hand-milling machine	2 arbor presses
3 universal grinding machines	1 straightening press
1 shaping machine	1 gas furnace
130 ft. of benches	

A CLASS OF FORTY

This equipment handles 40 men, with the necessary instructors, and usually graduates about five men a week into regular shop work. This has been so successful that over half of the

men so trained have been hired by other local firms, which is one of the best proofs of their desirability. Several of the boys with only four months' training have been accepted in the navy as second-class machinists. Another product of the school shop is now foreman of the toolmakers on the night shift and is one of the best toolmakers in the shop. The interesting part is that prior to December, 1915, he had no shop training whatever.

As fast as the men are sufficiently trained they are placed in positions that are open in the shop, each foreman keeping the school informed as to his needs. This does not mean that every student serves a given length of time in the school, as this depends upon the natural aptitude of the man or boy and of course upon the kind of work to which he is best adapted. In some instances a few days have sufficed to give the necessary start, while on the other hand some have been kept in the school for several months.

The wages paid are attractive enough to secure a good class of learners, and run from 17c. to 20c. an hour for boys of no previous experience to 35c. an hour for men who have been in other lines of work, such as driving grocery teams or shipping work. Few men have been found who did not earn up to their day rating after they

got out into the shop and the average has been about 10c. an hour over this rating. This is looked after very closely to know how the cost of training works out and also to keep tabs on the efficiency of the training itself. As each man goes from the school into the shop notification is sent to the cost department, which starts a special record. This is maintained for six months in order to find out the exact earnings of these men and to see how they compare with skilled men of long training when working at regular shop work and at piece prices which have long been established. The fact that Mr. Spence is seeking to enlarge his school speaks volumes for the results he has secured.

The success of this plan depends very largely in obtaining the right kind of teachers and in securing coöperation with the shop. The foreman must be shown that his work is not being taken away, but rather that he is being relieved of a part of his duties so that he will have more time for that which will make him more valuable to the company—the purely executive side of the job. Then too the student must be made to feel that the school is not simply a mill to grind out as many men as possible for the sole benefit of the shop, but he must be shown how it makes him much more valuable to himself and to the

community. To prevent the student becoming discouraged after getting out into the shop the chief instructor still continues to keep in touch with him frequently for several weeks. To the new man this is a source of encouragement when things do not go exactly as he would like.

THE POINTS TO BE REMEMBERED

Mr. Spence sums up the situation in the following pithy paragraphs:

1. Few men have the faculty to teach. Often the best workman is the poorest teacher. Hence, it is easier to find one teacher and let him do the bulk of this work.

2. The press of output prevents a foreman from giving proper attention to beginners even if the foreman happens to be a good teacher.

3. It does not pay to have a high-class executive foreman spend time on a beginner any more than a professor of mathematics in a college could afford to put his time into first-grade work. In fact, in most cases he would probably lack the real qualifications for first-grade work, *i.e.*, patience and human insight.

4. Unless the schooling is centralized the corporation cannot readily carry out a fixed policy with regard to teachings other than mechanical,

i.e., questions pertaining to honesty of product, citizenship, etc.

5. The influence on the future attitude of these men toward each other and toward industry depends largely on the impression made on them at the start. This should be controlled as far as possible.

6. In a school the beginner is sure of a variety of work, whereas the tendency in the shop is to give the beginner such a dose of whatever simple work he can do that he will not disturb the foreman again for some time, or as the boys say, enough to "hold him for a while."

7. The training probably costs less in the school than in the shop. This is not always clear as the true cost in the shop is almost always buried in departmental expense, but it is there just the same.

As there is nothing like ocular demonstration we are very glad to present a number of illustrations from the training school in this shop. In a class picture taken not so very long ago, the ages of the students ranging from 16 to 60 years, and the occupations previously followed vary in about the same proportion as the ages of the students vary. Some of the occupations are shown in detail in the illustrations.

The businesslike appearance of the school shop

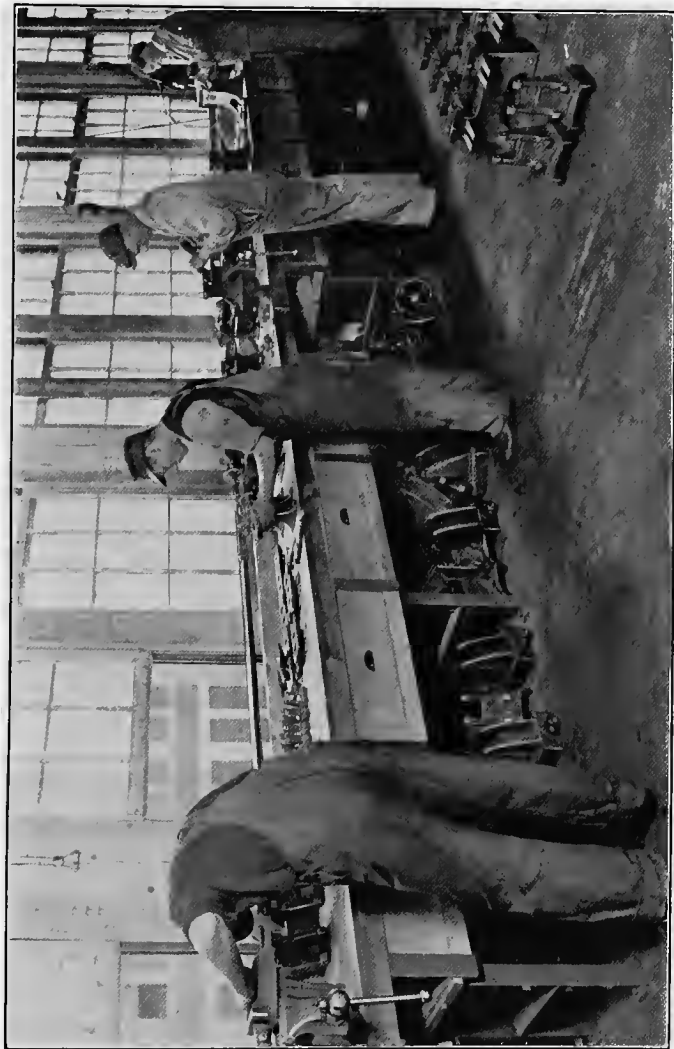


Fig. 11.—Where the students learn bench work.



FIG. 12.—A 16-year old—graduated in 9 weeks.

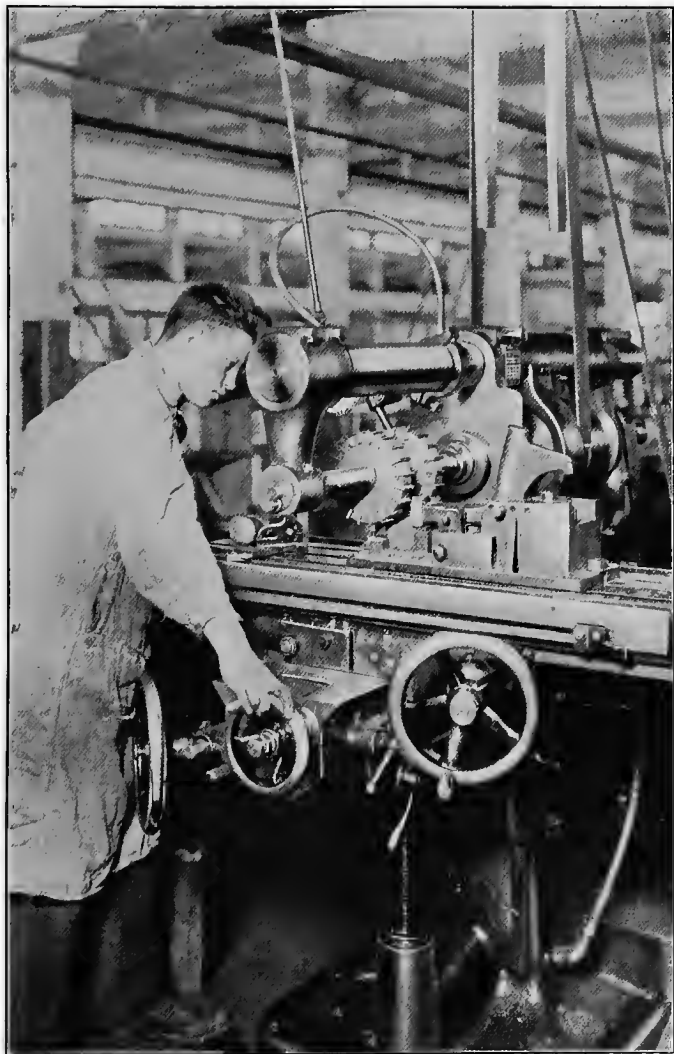


FIG. 13.—This boy became a tool maker.

(Following Fig. 12)

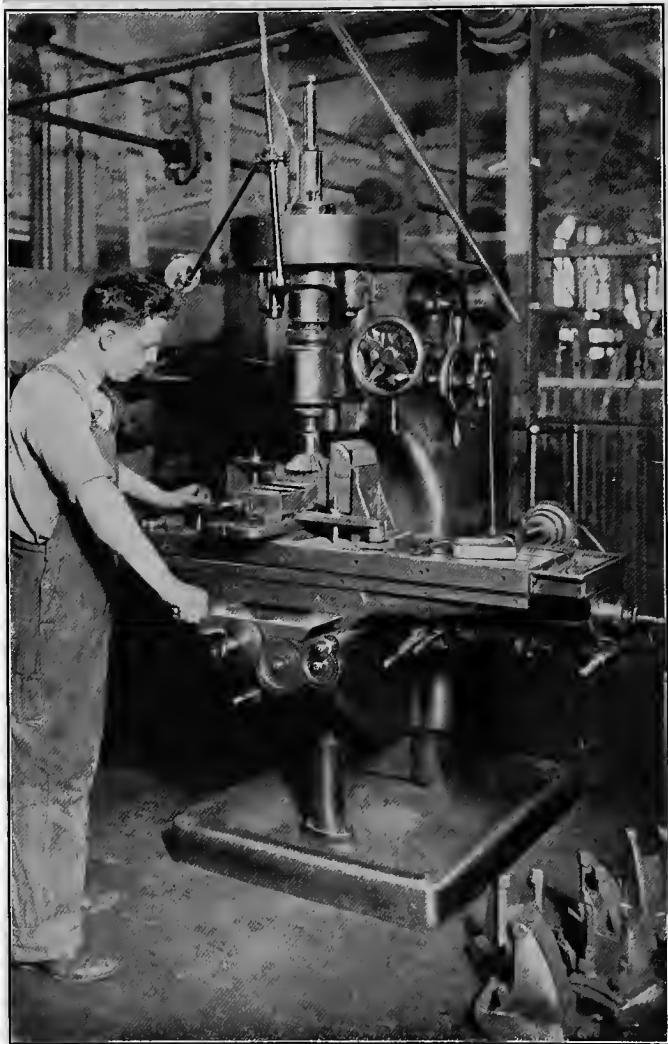


FIG. 14.—An ex-plumber who made good.

(Facing Page 87)

is shown in Figs. 10 and 11, the latter showing assembling work of various kinds. Six weeks before this was taken the last man at the bench was running his own butcher shop, but the uncertainty of the business in these times led him to leave it for a chance to get into shop work.

SOME VISIBLE PROOFS OF SUCCESS

In Fig. 12 is a 16-year-old boy who after spending nine weeks in the shop school could handle very creditably any simple machine operation. He had no previous experience. Another bright boy is seen in Fig. 13. This lad was 17 years old and spent eight weeks in the school, with the result that he can now make such tools as taper reamers from start to finish. Fig. 14 shows a man with no previous machine experience, who had worked at plumbing and had driven a team. With two weeks' training in the school shop he was milling a grinding machine back-rest body and can handle any similar work.

A more complicated job is shown in Fig. 15. The man doing this work was formerly a crane operator and spent five weeks in the school. He can do many kinds of lathe work, and after a total experience of 10 weeks he was earning about 45c. an hour. A similar case is shown in Fig. 16. This man has developed into a good

turret-lathe operator after eight weeks in the school and earns about the same as the man previously mentioned.

The next three illustrations, Figs. 17 to 19, show three different types of work and men. The first of these men was a shipping clerk who had spent four weeks in the school; the next a boilermaker who was in the school for seven weeks, and the third had run a turret lathe on shell work, but had never handled anything else. He only required two weeks at the school.

The last two views, Figs. 20 and 21, show men on grinding operations. The first had no previous instruction and has spent five months in the school. He has however acted as assistant instructor, but now operates a Norton plain grinding machine on production work. Perhaps the greatest contrast is shown in Fig. 21. As will be seen, the man is operating a Brown and Sharpe universal grinding machine, and this after a previous experience as a corset designer and with only five weeks at the school.

COURSE GIVES FUNDAMENTALS

The notable feature of this school as compared with most other short-term schools is that it does not attempt to make specialists or operators of one type of machine, but gives the foundation



FIG. 15.—Using the compound rest.

(Facing Page 88)

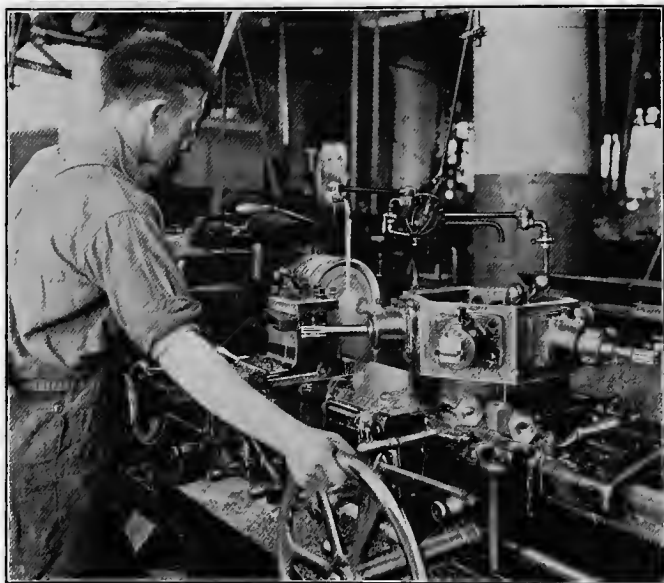


FIG. 16.—Now a good turret lathe operator.

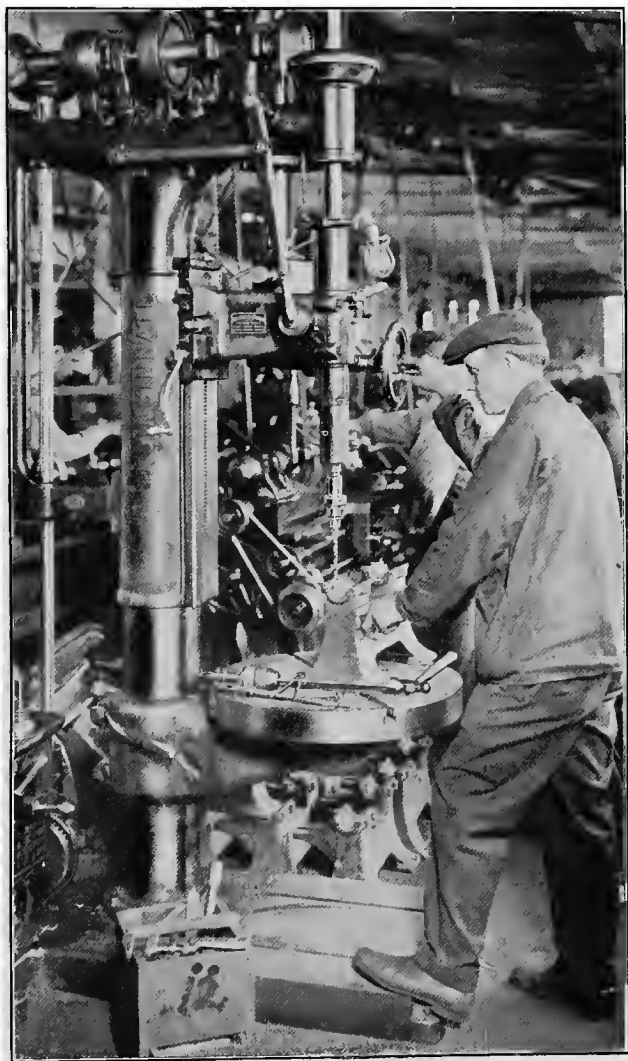


FIG. 17.—Never handled machines before.
(Following Fig. 16)



FIG. 18.—A change from his boiler-making job.



FIG. 19.—A special shaper job.

(Following Fig. 18)

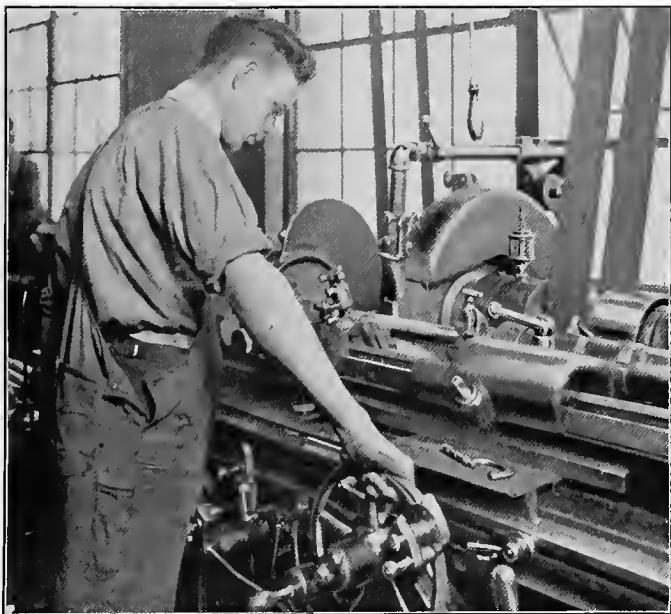


FIG. 20.—Plain grinding in quantity.

(Following Fig. 19)

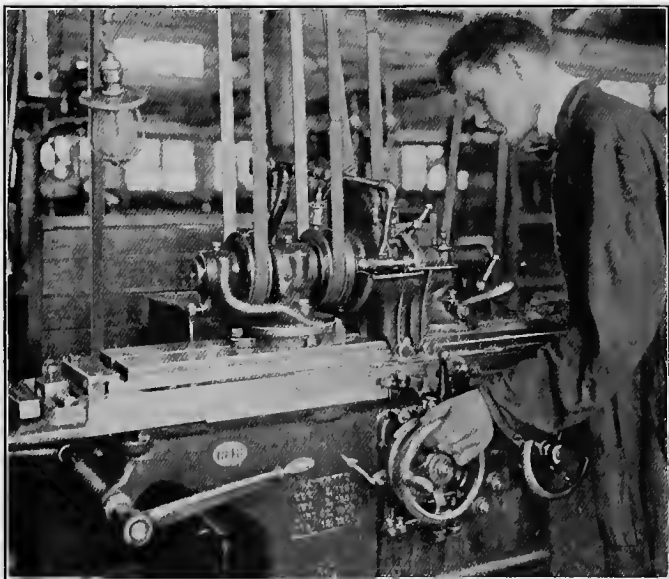


FIG. 21.—Handling a Universal grinding machine.

(Facing Page 89)

of an all-around course. It does not give the practice that the old-fashioned apprenticeship gave in four to five years, but it does give enough of the fundamental knowledge of the different types of machines to enable a fairly bright man or boy to grasp the machine operations much more readily when he gets out into the shop. It also has the advantage to the Norton Grinding Co. of giving it a supply of men which it can use in different departments as occasion demands.

The time has gone by when this very important subject can be longer neglected, and the stealing of men from other factories is likely to be the subject of drastic action in the very near future. It has become absolutely necessary to train men and women—to increase the supply rather than to waste time in devising ways and means of luring them away from someone else. And the time is probably not far distant when training will be made compulsory as was done in Great Britain. During the war it reached the point where every firm (with a very few exceptions) employing 300 or more workers had to organize a portion of the shop as a training school for improving the skill of unskilled workers. Smaller factories were exempted, but arrangements were made with neighborhood technical schools for carrying on the work. This training had to be

done whether the shop had a sufficient number of trained men or not, so as to maintain the supply of skilled labor in the kingdom. This arrangement included the paying of the worker during training on the same basis as that earned before the training period. France had also made training compulsory in all shops, which emphasizes the need for us to follow suit so as to have a supply of workers.

In addition to these examples of what has been accomplished in two machine shops in the way of intensive training we must not overlook the fact that a great number of preliminary training schools have been successfully used in various lines of war work. In addition to this C. R. Dooley formerly of the Westinghouse Company, did a wonderful work in the training of soldiers at the various camps in the many trades required by various branches of the army. These men were given intensive courses at many different schools and the results accomplished in six to eight weeks that we shall have to revise our ideas of the time required to give fundamental knowledge concerning the machine and other trades.

This work emphasizes the fact that there is no excuse for us to ever again have a shortage of men skilled in various trades, as long as we have

man power available. We have added much to our productive capacity and we can add more each year by systematically training men and women in the different trades. Every shop and every community must do its share and we shall do away with the cry of labor stealing while at the same time we will increase the productive capacity of our shops in various lines of work.

CHAPTER VI

NON-FINANCIAL INCENTIVES

To show the kind of work which has been done by Robert B. Wolf, to whom reference has already been made, the following liberal extracts are made from a paper presented by him to the American Society of Mechanical Engineers in December, 1918. Mr Wolf is a member of this society and is also manager of the Spanish River Pulp & Paper Mills, Ltd. In his talk before the Babson Conference Mr. Wolf advocated making the men familiar with the cost of the various operations, as it creates a desire to produce more material, and this is of even more importance than the quality of the equipment.

Another interesting feature of these records has been to bring the efficiency of the poorer men up to that of the best, the accomplishment of which has done much to simplify the standardizing of wages on such classes of work. This has not been done by lowering the production of the best men, but by bringing all the others up to their level.

Mr. Wolf is a great believer in democracy in the shop, and finds that by giving the men the opportunity to exercise their minds in the right direction and aiding them in every possible way a great increase in efficiency is secured. His experience has been that it is better to utilize the men's brains in this respect than to have them exercise them in finding ways of beating the boss.

An interesting phase of Mr. Wolf's talk was that while the plant at Berlin was non-union the three large ones in Canada were completely unionized organizations, and he found no trouble whatever in introducing the same method and securing the same coöperation and efficiency. He simply had to explain his proposed plan to the organization leaders and to the men themselves to point out the advantages to all concerned, after which he experienced no difficulty in securing their coöperation. He finds that all men are human and that they will respond if they are treated right and convinced of a square deal.

The A. S. M. E. paper follows:

"The basis of all 'non-financial incentives' is interest in work. Interest in work implies a desire to produce actuated by internal motives rather than external discipline.

"Production means creation and the industrial creative function in man is a mental process and lies in his intelli-

gent adaptation of means to ends. It is useless, therefore, to look for real creative work unless the workman has a chance to think and to plan; any other working environment either fails to attract or actually repels the workman, and as a consequence offers no incentive to increased effort.

"Work which does not call for thoughtful reflection, and which uses only muscular effort, tends to draw man down to the level of the brute and makes for industrial irresponsibility and consequent social disorganization. The unthinking man cannot be a responsible man.

"It is the self-conscious faculty of man which distinguishes him from the animal and makes him above all a creative center through which the universal life giving power can deal with a particular situation in time and space.

"To use a homely illustration with which every one is familiar—the traffic at each crowded street crossing cannot be regulated from the City Hall; it requires an individual (the traffic policeman) in the congested spot to deal with each particular situation as it arises, and upon his powers of observation and selection depends the orderly flow of traffic.

"It is only through the individual life that the universal life can act and therefore the universal is compelled to evolve many individual lives if organization and order is to replace the unorganized state represented by the purely generic operation of natural law.

"The problem of social organization is, then, how to organize society upon the basis of respect for the individual. This is also the industrial problem as well, for industry in the broadest sense is society in its highest form of activity because it is essentially constructive and therefore creative activity.

"It was an inevitable corollary to the universal plan of creation that the individual life came into being not to

create material substance as that had to be before individual life could gain consciousness. The function of the individual life, however, is to create by a thought process conditions especially selected to produce results which nature unaided would fail to produce.

CONFORMING TO NATURAL LAW

This is what the horticulturist does. His power lies in his knowledge of natural law and his creations are made possible because he conforms to the law. The uncultivated orchard reverts to its original wild state when no longer attended by man but increases in productiveness by continued thoughtful application of man's power of selection and adaptation.

"It is by a similar process of conscious selection that such devices as the steamboat, steam engine, electric generator, and the telephone came into existence. They did not come into being and never would have been created by the generic operation of nature's laws.

"To illustrate further: the desire of the savage to cross a body of water too wide for him to swim caused him to observe the floating of things which floated naturally. As a result of this observation he built a raft; and finally, by further observation, he discovered the principle that any thing which, bulk for bulk, was lighter than the water it displaced would float, and although he perhaps unconsciously applied this principle, it is true that from its application he evolved the canoe.

"Upon a higher plane, the modern electric generator was evolved by observing that a wire passed at right angles through a magnetic field would induce an electric current to flow through it in a certain direction.

"It was only by creating, through the application of the personal factor, conditions by which this law could be expanded that electricity was generated commercially. The electric generator is nothing more than a large number of such wires, insulated one from another, passing in and out of a number of magnetic fields, plus a device for collecting and conducting away the current generated. The important point to remember is that there never would have been an electric generator without the introduction of the individual personalities who literally created it.

"In this connection it is well to observe that all of our creations, if they are to be successful, depend upon the strict observance of the laws of nature. When we clearly see man's place in the universal life movement we can understand why it was that in the long process of evolution it was inevitable that a being capable of measuring by reflection be evolved. The very word "man" is derived from an Arian root meaning to measure.

"All this may seem at first sight far removed from the problem of 'non-financial incentives,' but it seems to me it is necessary before proceeding further to gain some conception of the reason for man's existence. The concrete illustrations of the operations of non-financial incentives will then have greater meaning.

"Man, through the exercise of his intellectual faculties so laboriously acquired through ages of slow evolution, literally reflects the universal creative process upon the plane of the particular. There can be no organization of material substance except through an individual who can observe the laws inherent in the materials themselves. Then, by a process of reflection, these materials can be organized into forms which they could not take unaided by the individual will or a power external to themselves.

"To state the matter more concretely: man, we know, cannot bring matter into existence, neither can he create the force which resides in the physical elements he uses in the day's work; what he does is to observe nature's forces in action and then, having learned the laws, *i.e.*, the reasons for their action in any particular direction, he seeks for means to make them express themselves more fully.

"This, of course, necessitates the creation of conditions which do not occur spontaneously in nature. We have here the beginning of what we call the artificial and it is significant that the highest type of this form of creation, upon a higher plane than the natural, is termed art.

"This creation of artificial conditions, which, taken all together, we call civilization, is, of course, the product of man's organizing power. While self-consciousness, the power of realizing the self as apart from the rest of the universe, has been a human faculty for untold ages before the present highly organized state of society had been attained, it is nevertheless true that now, for the first time in the history of the white race, we are confronted with the problem of correcting the repressive or selfish character of civilization so that it will serve the mass of humanity. If we fail to accomplish this it will be destroyed by the same creative power which brought it into existence.

MAKE ENVIRONMENT ATTRACTIVE

"We must learn how to change the industrial environment from one which repels mankind to one which attracts. In other words, the incentive to work must be inherent in the nature of the work itself.

"Now what are the conditions which we must meet in the industrial world to make work attractive? We have ample evidence that increasing financial returns have failed to

stimulate productivity and, on the other hand, the constant demand for shorter hours and the increasing labor turnover is proof that work in most of our industries not only does not attract but actually repels the workman. We must, therefore, look into the working conditions themselves for the answer. This is the only scientific method of procedure.

"I would like to quote from a letter which was received from a very intelligent labor leader recently, to show how the mass of employees look at the problem and how urgent is the need for its immediate solution if we are not to have a greatly reduced production of the necessities of life brought about by the concerted action of the workers—

Is it not true that the industrial evolution which has brought the trusts into existence has been the means of eliminating the "human touch" in industry? During the days of small industrial plants, the employer and the employee, of course, were really fellow-workmen. At the present time, however, the employee has perhaps never seen any of the stockholders of the industrial plant where he is employed.

You say that: Men can be productive only when they take an interest in their work and they will not take this interest unless those entrusted with the direction of their efforts realize that they must teach them constantly how to exercise their creative powers.

While I agree with everything you say relative to creative work and have thought along these lines considerably myself, still, is it possible in industries, as they are constituted at present, to enable the average workingman to do creative work? Isn't it true that industry is becoming so specialized that the workman is no longer a creator? I realize that while it may still be possible for the workman doing certain jobs in the mill to do creative work, to a certain extent, still isn't the tendency of modern industry more and more toward making the workman simply an appendage of the machine?

In the paper you sent me, you described how you designed a

plan for the men operating the hydraulic press to take an interest in their work. This certainly is a practical illustration of what can be done, and perhaps could be cited as a refutation of what I have just written above. I realize that there may be certain jobs in the mill where the creative powers can still be allowed to develop, and that the workman may be given a chance to express his individuality, but the point I am trying to bring out is that the tendency of *modern industry* is away from creative efforts and gives the workman less and less opportunity for individual development.

EFFECT OF MONOTONY

When I worked in the factories, which I did from the age of 12 to 25, one of the things I found the most dissatisfaction with was the deadening sameness of the work. I never remember a time, when working in the factories, that I became so interested in my work that I did not long for quitting time to come.

After leaving the factory work I got a job with a building contractor. As I became more proficient as a carpenter, I have time and again been put doing certain work that was more or less creative, in which I have become so interested that I paid no attention to quitting time and have worked for two or three hours after the time when I might have quit work. There is joy in creative work. But, in my opinion, no matter what schemes we will try to devise, modern industry is going to tend more and more to make simply automatons of men.

I may say, however, that I could find very little to criticize in either of your articles. You have demonstrated, from practical experiments, things that I have often theorized about. The conflict in industry during the next few years, in my opinion, will be between the democratic and autocratic ideas. The autocratic idea, I think, is best exemplified by the German military machine.

"I was able to convince the writer of the letter from which I have just quoted that creative work could be done to a

great extent in modern industry, and, further, that this could be accomplished, without any radical changes in equipment, greatly to the advantage of both employer and employee.

INDIVIDUAL PROGRESS RECORDS

"To do this, individual progress records are necessary so that the workman can know from day to day how he is improving in the mastery of the process.

"The first example is from that branch of the wood-pulp industry known as the sulphite process and shows a cooking chart which was designed to give the cook information about the reactions in the digesters in which the wood chips are cooked in a 6 per cent. solution of sulphurous acid partly combined with a lime base.

"The skill in cooking consists in the proper control of the relief valve.

"Before the introduction of these cooking charts, all this was left to the unaided judgment of the cook with usually nothing to help him but a small hand thermometer and a pressure gage. Of course, great variation in the pulp was the result. The cooking charts, plotted by the cooks themselves, however, helped greatly as they enabled the quick visualization of the work.

"Immediately after the introduction of these charts a very marked increase in the uniformity of the pulp was noticed, and the cooks, while at first opposed to the new method of "cooking with a lead pencil" as they called it, soon learned to like their work much better for the reason that they now had some way of visualizing the work in its entirety. In addition to more uniform quality of the pulp, the yield from a cord of wood increased something over 5 per cent.

CONTINUOUS PROGRESS RECORD

"We soon found that it was necessary to give some sort of continuous-progress record if we were to keep up the interest in the work, because no man could carry in his mind anything but a general impression of his progress from day to day. Progress records measure the man's increasing mastery of his work, and we feel that it is one of the moral obligations of the management to keep such records for the individual workman. Without these records men will not think of improvements in the process and they cannot be blamed for becoming indifferent. How long, for instance, would a superintendent or manager retain his interest in the economical operation of his plant if his cost sheets were withheld? We, as executives, must have quantity, quality, and economy records, otherwise our interest soon lags. Why, then, should we expect the workman to be interested when he is not furnished with a record which at least reflects one of these elements?

"Such records can be grouped, under three main headings: quantity records, quality records and economy or cost records. Quality records, which occupy the middle position, are, perhaps, of the greatest importance for they bring the individual's intelligence to bear upon the problem and as a consequence, by removing the obstacles to uniformity of quality, remove at the same time the obstructions to increased output. The creative power of the human mind is, however, not content simply to produce the best quality under existing conditions of plant operation. The desire to create new conditions for the more highly specialized working out of the natural laws of the process, demands expression and this expression at once takes the form of suggestions for improvements in mechanical devices.

"This desire contains within it the germ of economic thought which will unfold and express itself eventually in a request for cost records, and the organization that neglects its opportunity to satisfy this desire is overlooking one of the great avenues leading toward intelligent productive effort.

"Because of the interrelation of quality, quantity and economy records, any complete record of individual progress must, of course, take them all into account. However, as this is not always practical we have at least one of three ways of measuring progress always open to us. .

PROGRESS RECORDS

"We keep a continuous-progress record of the work which is mainly one of quality. Most of our records refer to the quality of the work performed; in other words, the nearness to which the workman approaches the ideal standards which he has helped to form. The democratic coöperative forming of these standards by the joint work of the trained technician and the practical workman is absolutely essential, otherwise continuous progress will not be made. The whole plan must be really educational in nature and to be so the records must record the natural laws of the process and the individual's degree of control of forces in the material elements that he is using. The more factors that can be recorded, the greater the interest in the work. The reason for this is obvious.

"Suppose there are nine men cooking. These men are posted in the order of seniority, with the highest monthly record on top. There are three foremen at the top of the record. Each of these foremen has three cooks under him and their standing is made up by taking the average records of the men under them. In this way we are enabled to get

not only the individual records of the men, but the group, or team-work records, as well.

"The temperature record is obtained by taking half-hourly readings from the recording-thermometer chart, upon which a standard temperature curve has been plotted, calling each reading which happens to fall on the standard line 100, and a reading 20 deg. either side of the standard line 0. This means that for each degree off of the standard, 5 points are deducted from the progress record.

"The time record is obtained by calling a certain time of cooking 100 and taking off on each digester cooked one point for each minute above or below this standard.

"The blowing record is obtained by calling 30 lb. pressure 100 (most of the cooking being done at a pressure of 75 lb. per sq. in.) and 60 lb. 0, the idea being to get the pressure as low as possible before blowing the digester.

"By an arrangement of this sort, by simply changing the relative value of the different factors, it is possible to emphasize any particular phase of the work. The men willingly pay the greatest attention to the factor that has the greatest value because it gives them the better record and because they know the reason for the change. For instance, if it is desired to emphasize quantity, we give a larger value to the time record and a lesser value to the temperature record. Production is then somewhat increased at the expense of quality.

"I could give many illustrations similar to the one just given of our cooking operations. I will give only one final illustration of how economy progress records meet with equally great response. In the plant where this system was developed were employed over 1200 men and perhaps half of these men had individual progress records and the rest came under some sort of group-progress record. Invariably

the records proved themselves to be an incentive to greater productivity.

COST RECORDS OF WORK

"In Fig. 22 is shown a foreman's detail job sheet which indicates the method for giving our maintenance foremen

FORM NO. 3	
FOREMAN'S DETAIL JOB SHEET.	
Job <u>2771</u>	Foreman <u>John Laffin</u> Date <u>1/10/16</u>
Name of Job <u>Install 2-35 Hp. Motors on Coarse Screens</u>	
Description <u>in West Mill.</u>	
<u>Electrical Dept. - Power Wiring.</u>	
Date Started <u>1/7/16</u>	Worked on <u>4</u> Days.
Labor Cost to Date	<u>31.6</u>
Material Cost to Date	<u>7.98</u>
Total Cost to Date	<u>39.58</u>
Labor Cost Yesterday	<u>0.80</u>
Material Cost Yesterday	<u>6.41</u>
Total Cost Yesterday	<u>7.21</u>
DETAIL OF MATERIAL USED YESTERDAY.	
ITEMS.	PRICE.
2-1½" Long-Turn Elbows,	0.51
4½ lb. Solder,	1.23
4-1½" Type E Condulets.	2.02
4-1½" 4 Hole Porcelains,	0.84
1 Roll Oiled Lined,	0.24
1-Roll Friction Tape,	0.11
15-100 Amp. Terminals,	1.66
	<u>\$ 6.41</u>

FIG. 22.—Foreman's job sheet.

cost records of their work. It is obviously a difficult matter when dealing with maintenance and construction work to give quality or quantity records as the work varies so much from day to day, so the only kind of records we could give the men were records of cost. The original suggestion to give these records grew out of the fact that we gave to each

operating department head a complete cost of operating his department for which he was held responsible.

"As soon as he began to realize this responsibility, because all the repair materials were charged to him, he at once began to make intelligent criticism of the engineering department, and especially was he critical of the maintenance foreman if he was wasteful in the use of materials. As a result of this, the maintenance foremen asked the master mechanic if they could not have job costs showing how economically they were doing their work as they had no idea of the value of materials that they were using. The foreman's detail job sheet shown is the result of this request. It will be noted that the job is fully described, the total cost for labor and material to date is given, as well as the cost of labor and material for yesterday. Then below is listed the itemized cost of all materials used.

"The men soon became educated as to the value of the materials they were using and we noticed a great change in the amount of waste; in fact, we had frequent cases where maintenance foremen would bring scales into the mill to make sure that the storehouse was giving them full measure of materials and we were soon obliged to get up a system of giving credit for material returned to the storehouse in order to help foremen keep down their job costs. This was in no sense a form of contract system, for all of our maintenance and construction men were paid by the hour and did not receive any more money for doing a job economically.

"The concrete results obtained by giving the cost sheets to the department heads and job costs to the maintenance foremen.

"In none of this work did we pay bonuses to a superintendent, department head or workman; our salaries and

wages were high, but payments were all on a monthly, weekly, or hourly basis. The increased effort therefore came entirely from a desire within the individual to be productive. This sort of creative effort produced great changes in operating conditions; we increased our yearly production from 42,000 tons to 111,000 tons without adding to the number of digesters for cooking the pulp, or wet machines for handling the finished product and we changed our quality from the poorest to the very best.

VALUABLE SUGGESTIONS FROM MEN

"Due to the intelligent suggestion which came from our men all over the plant we were able to make very radical changes in the manufacturing processes. Entirely new methods of preparing our wood, making acid, bleaching, etc., were created, all of which we paid for out of the earnings.

"I maintain that this was all the result of the freedom our men were experiencing because they were working in an environment which stimulated thinking. They had ample opportunity constantly to increase their knowledge of the underlying natural laws of the process, and were therefore able to realize the joy which comes from a conscious mastery of their part of the process.

"This freedom to express one's individuality in constructive work according to law, is the only real freedom, for freedom unrestrained by a consciousness of the universality of natural law leads to anarchy.

"We should never lose sight of the fact that the degree of conscious self-expression which the workman can attain is in direct proportion to the ability of the organization to measure, for his benefit, the impress of his personality upon it. The most democratic industrial plant therefore is the one which permits the fullest possible amount of individual

freedom to each member, irrespective of his position and at the same time is so sensitively adjusted that it reflects immediately the effects of his actions. If his actions result in injury to others he will see that as a part of the whole he, himself, must also suffer.

"Man is not an animal, but a free self-determining mental center of consciousness whose reason for existence is that the universal life can deal with a particular situation in time and space, and, by this means, be enabled to evolve a material universe organized to express the one great individual life of which we are all a part.

"In conclusion let me say that I am well aware that to some of you this may seem like pure philosophical speculation far removed from the practical affairs of every day life. I have said nothing however that I cannot back up by any number of additional illustrations and my hope is that the examples given will stimulate others to make similar investigations, so that we can fulfill our mission in this country by evolving an industrial philosophy which will have for its ultimate aim the continuous unfoldment of the latent powers in man.

CHAPTER VII

THE EMPLOYMENT MANAGER

One of the results of the changing attitude regarding the importance of labor and the part which it plays in economical production, is the increased importance of the employment manager. For it is coming to be recognized that the proper selection of workers, the placing of them in their proper position in the shop, the prevention of personal grudges against individuals, the retention of workers as long as it is mutually advantageous, play a much greater part in economical production than we formerly realized.

The best results require a man or woman of broad judgment, of sympathetic understanding, of tact in dealing with people of various kinds and other qualities which tend to promote harmony all through the plant. The employment manager of the future will probably handle what we formerly called welfare work as well as community relations, in addition to the work of "hiring and firing," as it is commonly called.

Perhaps the qualifications for such an employment manager can be better described by quoting Philip Brasher, himself an employment manager of wide experience and at present with

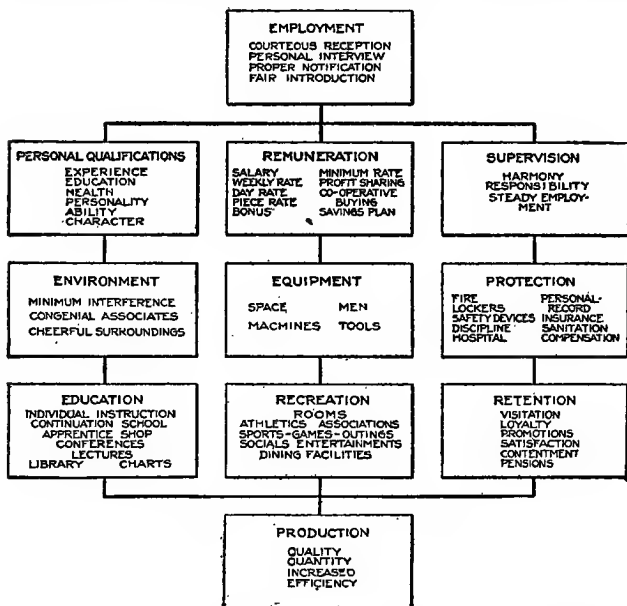


FIG. 23.—Work of the employment manager at the Winchester Plant.

the Chile Exploration Co. in that capacity. It is needless to say that no employment manager can be successful unless the general manager of the company is in sympathy with modern methods of dealing with labor.

THE EMPLOYMENT MANAGER¹

"At the present time when the subject of employment is so much in the public mind it would seem worth while to consider the personality of the employment manager. To anyone who has devoted thought to the question it is rather astonishing that American industry, which has spent so much effort on organizing efficient purchasing departments and testing laboratories for materials, has absolutely ignored until recently the acquisition of proper human material which after all is the backbone of any successful organization. The chart, Fig. 23, is used by L. O. Pethick, director of personnel of the Winchester Repeating Arms Co., and indicates the varied activities in personnel work that the employment manager should be held responsible for. The establishment by the Government during the war of schools for employment managers and the establishment of a course at New York University and elsewhere show that the lack of trained men in this line is at last beginning to be appreciated.

BROAD EXPERIENCE NECESSARY

"It is obvious that the man whose duty is to select other men and women for a certain task must have broad experience and education to make him competent to fill his position. If it is important to have a highly paid specialist to superintend the buying of a million dollars' worth of goods yearly or to pass upon the proper design of a piece of machinery, how much more important is it that the man selected to buy a million dollars' worth of human nature in the course of a year must be properly equipped by nature and training to give the best results.

¹ By Philip Brasher, Employment Manager Chile Exploration Co., in the *American Machinist*.

"Take the training of the employment manager first. In my opinion no one can properly hire men who has not done a great deal of really laborious work himself. By this I mean actual physical labor of various kinds with his hands. A man should have had a general experience of at least ten years, and better twenty, if that is possible. He should also have a good fundamental education, and if he has a higher education so much the better; that is, if it does not result in his acquiring too many theoretical ideas which sometimes are the curse of a "college education." In addition to this the employment manager should have traveled and served an apprenticeship in different localities and, if possible, in several countries. In other words, he should have broad education and experience upon which to build before he is considered to be competent to pass judgment upon others. These considerations, I believe, make the employment manager's job an ideal one for an older man.

"The responsibility of an employment manager is seldom appreciated by those who have not a clear understanding of the situation. Many times a day he has the power to make or break some individual, and this is something which should always be kept in mind. An employment office cannot be conducted as an eleemosynary institution, but a courteous reception and hearing and a suggestion as to some place where immediate employment may be secured if the services of the applicant cannot be used by the employment manager's concern are part of the modern plan. There is enlightened self-interest in this.

THE IDEAL EMPLOYMENT MANAGER

"Now to get down to the real foundation of the matter, namely, the inherent traits and qualifications that

make up the personality of the employment manager. No matter what education, no matter what experience, no matter what training he might have, unless he be the right type of man he cannot render satisfactory service. I believe—and please keep in mind that I am stating my idea of the ideal employment manager, not the one you are apt to secure, but the one you should aim to get—that he should have an unlimited stock of hardheaded common sense, which would eliminate any tendency toward the impractical no matter how splendid the underlying motive. He should be forceful, keen and courageous, because no mind can be too keen for the job, and no man who is well balanced can be too courageous to meet the incessant opposition that will be occasioned by the naturally conservative policy to be found in most old-line companies. His decisions should be made after due deliberation based on a complete knowledge of business in general and his own organization in particular. He should have the foresight to see what the result of his decisions is going to be. He should have an organizing, constructive type of mind, and these qualities will be tested by his choice of the immediate assistants upon whom he must depend for a great deal of the actual selection of employees. He should be able to appreciate the commercial and financial necessities of the situation, because the first principle of business is that it should pay. He ought to be democratic, responsive, enthusiastic and persuasive, but absolutely just and conscientious. He should be sympathetic and observant, a shrewd student of human nature, with intuition highly developed. These qualities, I believe, are essential.

“His experience should have taught him the general classes into which men and women naturally fall:

“First—Organizers. Those capable of opening up new

work; starting something out of routine; with plenty of initiative, etc.

"Second—Administrators. Those capable of taking hold after organization has been completed and running their jobs with the maximum of conscientious care.

"Third—Detail men. Those lacking qualities of leadership.

"Fourth—Ineligibles. Those not suited to the organization for one reason or another.

"The man who takes an organizer and places him in an administrator's position is not only incompetent in his own job, but eventually causes the one so placed to fail and possibly to fail miserably later on. Therefore his responsibility is twofold—to his employers and to those whom he places. He will always have the satisfaction of knowing that no matter how much he may improve the job will always remain bigger than he.

SHOULD KNOW WORK AND MEN

"The employment manager must know not only the work and how it should be done, but also the men in charge of the work. If, for instance, the head of a department has a prejudice against red-headed men it is wisdom to refrain from sending him any until you have won his confidence to such an extent that he would take a green-headed one if you said he would make good.

"At the present time, with the demand for efficient service as great and vital as it is, it seems to me that too much thought and effort cannot be put into obtaining the proper men to select the personnel.

"In conclusion, I shall quote something written by John M. Siddall which might almost be called 'The Employment Manager's Creed:'

"A man like Schwab, by finding and encouraging men and by inspiring their loyalty, carries himself and all his associates on to a success which none of them could achieve alone. He establishes a long battle line of organization in which there are great numbers of men intelligently used and genuinely appreciated by a commander who realizes that his own success is manifolded by the work of his associates.

"In business it is not the individual producer who gets the biggest or surest rewards. It is the organization builder. Any man, no matter how small his business, ought to recognize that fact. Unless an employer is interested in finding, training, holding and dividing with good men, the business he is engaged in can never grow. It will remain the work of one man, and the work of one man is bound to be limited in size and profits.

"You may think that you are in the shoe business or the shirt business or the furniture business; but you are mistaken. After all is said and done, we are all in the same business—the man business—no matter what we make or sell. Some of the big fellows see that point more clearly than the rest of us do, and multiply their profits and power accordingly."

The progressive employment manager can do much to help secure amicable relations with labor in the years to come. And this is absolutely necessary to our future prosperity. We cannot meet the competition of the world with labor antagonistic and sullen because it believes it has been unfairly treated. The soldier who has braved the hardships of war in his fight for democracy is not coming back to this country

to walk the streets looking for work or to accept pay which barely keep body and soul together. The standards of employment insisted upon as necessary for war work will not be discarded in times of peace, without a costly struggle which none can afford.

The employment manager must have a position which enables him to consult freely with the general manager. In some of the larger concerns he is now made a vice-president of the company, the same as the vice-president of manufacturing. He must be big enough for the importance of his work and be recognized as filling an important position.

There seems to be little doubt that higher standards of living means increased production in most cases. This in turn means an increase in consuming power, for labor is the great consumer in any country. We are beginning to realize that it is time to apply the same business principles in labor problems as with other consumers of our products.

Some employers have felt themselves personally aggrieved at the high wages which labor has demanded and received during the war. Some have gone so far as to say they will get even when jobs are less plentiful so that men will have to accept their terms or starve. A little

careful thought will, however, show that the only real injury has been to their pride and not to their pocket book, as in nearly every case the increased cost of labor has been passed on to the consumer. The employer who adopts the starvation policy is playing with fire and should remember the words of the President in addressing Congress regarding the terms of the armistice:

“Hunger does not breed reforms; it breeds madness and all the ugly distempers that make ordered life impossible.”

No far-sighted business man is going to run the risk of breeding such madness in his plant or in his community. The lives of those he loves are too precious to take any such chances.

CHAPTER VIII

LATEST IDEAS OF LEADING MEN

As an indication that there is a new conception of business and one which must add new phases to the problems of work management, I am quoting liberally from some of the well-known speakers at the last conference of the Chamber of Commerce of the United States at Atlantic City, N. J. in December, 1918.

The opening address of the President of the Chamber of Commerce of the United States, Harry A. Wheeler, contained the following concerning the question of labor and its problems in managing industry.

"We are facing many vital changes in the controlling power of the political and economic machinery of the world, power which if unrestrained will bring much grief before it settles down to a sober and intelligent recognition of its ability to impose harm as well as good.

"In our own country the control of our National destinies is sure to be vested in something else than the power of wealth or the intimidation of possession of great resources. In short, the less fortunate in birth or possession, being numerically superior, will not permit a revision to some of the methods of the past, nor is there any reason to believe

that those who occupy the position of the more fortunate in material things will be less anxious to assist in developing a program that will embody the best provisions for coöperation and will eliminate class and caste in our internal personal relationships.

"It is only by sober consideration of this factor that we are going to be able to negotiate this period of reconstruction without the disturbance which would destroy much of the satisfaction we have gained out of the experience on the other side, and as an example to the boys when they come home of how we have acquired a new solidarity and an understanding of the value of coöperation. Even in those relationships formerly regarded as subject only to conflict of interest.

"Do I think that the problem that may confront us with respect to labor's attitude or that may confront them with respect to our attitude will be one where the lion and the lamb will lie down together? I do not; but I call to your attention and to them that the lion and the lamb must browse in a pasture that is also occupied by others and the lion and the lamb by their conflict should not and shall not so far disturb the relationship of those others as to make the pasture an uninhabitable place."

Frank H. Taylor, General Manager of the S. S. White Dental Co., whose experience in work management extends to both sides of the Atlantic said:

"We, as manufacturers, have a deep responsibility in respect to our employees. The cost of living cannot be suddenly reduced. The immediate curtailment of wages, would therefore be most unfortunate and while our people

are working out their personal problems, we should put all of our force into plans to maintain their wage rates.

"There is concern in my mind that when prices must finally be lowered, we shall regulate the pay of our people upon some new basis, and having this in mind, I will throw out briefly an idea that is worth thinking about.

"My proposal is that we all try to establish in our minds a minimum or basic wage, which will apply to those who give us not better than the average service, and that in addition the service rendered by our people individually. I want the willing worker to be well paid for all the service he renders that is above and beyond what is received from those who get the minimum or basic pay.

"May I add in all seriousness that in addition to the wages which I want to see maintained, we owe our employees an opportunity to secure a business education while they are in our employ.

"The plans which will accomplish the above ends must be made and carried out by ourselves, because we know the business problems better than outsiders can know them. Even Government officials who have the best possible intentions cannot know our problems intimately.

The address of Mark L. Requa, General Director of the Oil Division, United States Fuel Administration, contained the following:

"If I were to define the 'spirit of the times' as applied to the management of any of our great corporations, I should say that it meant a broad humanitarian view of social problems, a sympathetic interest in the welfare and aspirations of the masses, a constant and intelligent effort to abolish the poverty line by helpful suggestion and wise

counsel, a realization that the old order passeth, that labor is entitled to a just wage, rational hours, decent working conditions, and that capital is entitled to a profit commensurate with the hazard of the particular industry in question, and that both must work in harmony if either is to survive.

"The official who looks to the balance-sheet of his company as the only satisfactory answer to his stewardship is shortsighted and has but faint conception of the real nature of his trust. His is a far more important task. In the case of the great corporation he is in truth the trustee for the people, administering affairs that—while perhaps not legally so construed—are as truly public-service corporations as are our railways.

"Radicalism runs riot among those who have nothing to lose; the teaching of thrift, therefore, is but a method of conquering radicalism. In self-defense, if nothing more, capital should be striving and planning to make every citizen a property owner, to make every one of us hold immediate and personal interest in the stability of our Government by making all of us have something at stake.

"Trade-unionism has come into existence because mankind was forced to collective bargaining in self-defense. That there are bad leaders of unions is no more an excuse for condemning all unions than is the condemning all corporations because of the acts of the few. Public sentiment must see to it, in the future, that the one is execrated equally with the other; and if so, neither can long survive.

"In speaking as I have I realize that there will be many in the ranks of both labor and capital who will refuse to admit the possibility of such a program succeeding. It is to those we must address our efforts. The task will not be easy; it will take years to accomplish; but in the end it can

be made to succeed. It is but one step in the evolution the world that began with the dawn of civilization and will continue while civilization endures.

Here are a few interesting extracts from the address of John D. Rockefeller on Representation in Industry:

"Obviously the day has passed when the conception of industry as primarily a matter of private interest can be maintained. To cling to it is only to lay up trouble for the future and to arouse antagonism. In the light of the present, every thinking man must adopt the view that the purpose of industry is to advance social well-being rather than primarily to afford a means for the accumulation of individual wealth. It must be borne in mind, however, that industry cannot be successfully carried on unless not only the community and the workers are adequately served but those whose money is invested are enabled to realize a just return.

"Who are the parties to industry? They are four in number—Capital, Management, Labor and the Community. Capital is represented by the stockholders and is usually regarded as embracing Management. Management is, however, an entirely separate and distinct party to industry—it consists of the executive officers, who are the administrators of the industry and who bring to it technical skill and managerial experience. Labor is represented by the employees, but its contribution unlike that of capital, is not detachable from the one who makes it, for it is his physical effort, his strength, his life.

"Here the list usually ends, for the fourth party, namely, the community, whose interest is vital and in the last analy-

sis, controlling, is too often ignored. The community's right to representation in the control of industry and in the shaping of industrial policies is similar to that of labor. But for the community's contribution, in the maintenance of law and order, of agencies of transportation and communication, of systems of money and credit and of other services, all involving continuous outlays, the operation of capital, management and labor would be enormously hampered, if not rendered well nigh, impossible. Furthermore, the community is the consumer of the product of industry, and the money which it pays for the product provides the wages, salaries and profits that are distributed among the other parties.

Might not the four parties to industry subscribe to an industrial creed somewhat as follows:

"1. I believe that Labor and Capital are partners, not enemies; that their interests are common interests, not opposed, and that neither can attain the fullest measure of prosperity at the expense of the other, but only in association with the other.

"2. I believe that the community is an essential party to industry and that it should have adequate representation with the other parties.

"3. I believe that the purpose of industry is quite as much to advance social well-being as material well-being and that in the pursuit of that purpose the interests of the community should be carefully considered, the well-being of the employees as respects living and working conditions should be fully guarded, management should be adequately recognized and capital should be justly compensated, and that failure in any of these particulars means loss to all four.

"4. I believe that every man is entitled to an opportunity to earn a living, to fair wages, to reasonable hours of work and proper working conditions; to a decent home, to the opportunity to play, to learn, to worship and to love, as well as to toil, and that the responsibility rests as heavily upon industry as upon government or society, to see that these conditions and opportunities prevail.

"5. I believe that industry, efficiency and initiative, wherever found, should be encouraged and adequately rewarded, and that indolence, indifference and restriction of production should be discountenanced.

"6. I believe that the provision of adequate means of uncovering grievances and promptly adjusting them is of fundamental importance to the successful conduct of industry.

"7. I believe that the most potent measure in bringing about industrial harmony and prosperity is adequate representation of the parties in interest; that existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

"8. I believe that the most effective structure of representation is that which is built from the bottom up, which includes all employees, and, starting with the election of representatives in each industrial plant, the formation of joint works' committees, of joint district councils, and annual joint conferences of all the parties in interest in a single industrial corporation, can be extended to include all plants in the same industry, all industries in a community, in a nation, and in the various nations.

"9. I believe that the application of right principles never fails to effect right relations that the latter killeth and the spirit maketh alive; that forms are wholly secondary

while attitude and spirit are all important, and that only as the parties in industry are animated by the spirit of fair play, justice to all and brotherhood, will any plans which they may mutually work out succeed.

"10. I believe that that man renders the greatest social service who so coöperates in the organization of industry as to afford to the largest number of men the greatest opportunity for self-development and the enjoyment by every man of those benefits which his own work adds to the wealth of civilization.

THE GREATER VALUES IN LIFE

"Men are rapidly coming to see that human life is of infinitely greater value than material wealth, that the health, happiness and well-being of the individual, however humble, is not to be sacrificed to the selfish aggrandizement of the more fortunate or more powerful. Modern thought is placing less emphasis on material considerations. It is recognizing that the basis of national progress, whether industrial or social, is the health, efficiency and spiritual development of the people. Never has there been a more profound belief in human life than today. Whether man work with brain or brawn, they are human beings with the same cravings, the same aspirations, the same hatreds, the same capacity for suffering, and for enjoyment.

"As the leaders of industry face this period of reconstruction, what will their attitude be? Will it be that of the stand-patters, who take no account of the extraordinary changes which have come over the face of the civilized world and have taken place in the minds of men, who say, 'What has been and is, must continue to be—with our backs to the wall we will fight it out along the old lines or go down with the ship.' Will they attempt stubbornly to resist the

inevitable, and arming themselves to the teeth, invite open warfare with the other parties in industry? The certain outcome of this will be financial loss, inconvenience and suffering to all, the development of bitterness and hatred, and in the end the bringing about through legislation if not by force, conditions far more drastic and radical than could now be amicably arrived at through mutual concession in friendly conference?

THE NEW ORDER

“Or will it be an attitude, in which I myself profoundly believe, which takes cognizance of the inherent right and justice of the principles underlying the new order, which recognizes that mighty changes are inevitable, many of them desirable, and, not waiting until forced to adopt new methods, they will take the lead in calling together the parties in interest for a round-table conference to be held in a spirit of justice, fair play and brotherhood with a view to working out some plan of coöperation which will insure to all those concerned adequate representation, an opportunity to earn a fair wage under proper working and living conditions, with such restrictions as to hours as shall leave time not alone for food and sleep, but also for recreation and the development of the higher things of life.

“Never was there such an opportunity as exists today for the industrial leader with clear vision and broad sympathy permanently to bridge the chasm that is daily gaping wider between the parties in interest and to establish a solid foundation for industrial prosperity, social improvement and national solidarity. Future generations will rise up and call those men blessed who have the courage of their convictions, a proper appreciation of the value of human life as contrasted with material gain, and who, imbued with the

spirit of brotherhood, will lay hold of the great opportunity for leadership which is open to them today.

"In conclusion, let it be said that upon the heads of these leaders—it matters not to which of the four parties they belong—who refuse to reorganize their industrial households in the light of the modern spirit, will rest the responsibility for such radical and drastic measures as may later be forced upon industry if the highest interest of all are not shortly considered and dealt with in a spirit of fairness. Who, I say, dares to block the wheels of progress, and to fail to recognize and seize the present opportunity of helping to usher in a new era of industrial peace and prosperity?

Here is what Charles M. Schwaab, who perhaps employs more labor than any other man in the United States if not in the world, says about the new phases of the problems of management.

"My friends, there is one other question of great and timely importance, to cover which no one can lay down general rules, and that is this great and important labor question. I am one of the men who believes in the fairness of American labor. I am one of the men who believes that the only foundation upon which any of these things can permanently rest is the economic use of everything, whether it be labor, material, manufacture or what not. Any foundation of organized labor or capital that is on a false basis must fail.

"Our Congress, our legislature in Washington, realized it, and rightly and justly took steps to correct it. What has been true of capital will be equally true of labor, and therefore the education of the American laboring man, must

be to have him realize that his permanency and success, and the success of the nation, will depend upon labor conditions and capital conditions that are founded on economic principles first of all.

"I am not opposed to organized labor. I believe that labor should organize in individual plants or amongst themselves for the better negotiation of labor and the protection of their own rights; but the organization and control of labor in individual plants and manufacturies, to my mind, ought to be made representative of the people in those plants who know the conditions.

SHARING WITH LABOR

"But, gentlemen, in the years gone by, I seriously doubt many times if labor has received its fair share of the prosperity of this great country. We, as manufacturers, have got to open our eyes to a wide vision of the present and the future with reference to our workmen. We have got to devise ways and means by which capital and labor shall share equally, not in theory, but in practice. We have got to devise ways and means of education. We must not only talk about these things but we must do these things. We have got to realize that many unjust demands will be made by labor as they probably have been made by capitalists and employers in the past. That is one of the lessons this great war has taught us—true democracy. The thing we have to do is to touch, not patronize, to educate and have the American laborer know and feel that he can stand with his head in the air as you and as I can, and say with pride, "I am an American citizen."

What does American citizenship mean except that any man to be a true American citizen must be able to hold

up his head and feel within his heart that he has done his duty to his nation and to his fellow men.

AUTOCRACY DEAD

"Matters will adjust themselves industrially in this country sooner or later by the natural course of events, but what we want to prevent is that sudden slip of the cog which will give us a social jolt that may be dangerous to our industries for years to come. We must be patient. We must go along with small or no profits if necessary. We must bend every effort to keep our employees busy, employed and satisfied. They must be made to realize the situation as we see it and be content to help us in that development. We must get closer together with our work people. We must listen with patience to their side of the story. The day of autocracy in government and labor has gone by. It is the day of democracy in which we now stand shoulder to shoulder for the protection of our mutual interests.

"Let us go home with our minds and hearts filled with determination that we American manufacturers and American business men are going to have successful accomplishments, that we are going to have it in an honorable way and that we ask our great representatives in Washington, from the President and the Secretary of Commerce down, to help American business men help sustain the prestige of the American nation and that we pledge ourselves to treat fairly with that great army of workmen who must share with us the prosperity and happiness of this great country of ours.

Henry P. Kendall, Executive Secretary, Committee of Industrial Relations and himself a

large employer, has this to say, in a paper before the American Society of Mechanical Engineers, December, 1918, on the "Standardization and Administration of Wages."

"With the end of the war, the greatest industrial problem doubtless is this: What general principles shall be followed in dealing with the labor problems of the future with all their unseen dangers and possibilities? War has changed conditions to such an extent that a return to the *status quo ante* is difficult, even though it were desirable and possible. The only alternative to the old system of allowing industrial relations to be adjusted by natural economic laws and preventing bargains seems to be that of standardization, or the conscientious and systematic regulation of these relationships by collective action, which does not necessarily mean Government administration, but which may be accomplished by voluntary collective action.

"The term 'standardization' does not necessarily mean uniformity of wages, hours or conditions of work. It means the determination of these conditions according to general principles, the justice of which is universally acknowledged. It is much easier to establish general principles than it is to derive the particular standards from them and apply such standards to actual situations.

REGULATION OF INDUSTRY

"It is a serious question whether it is possible to escape the task of regulating industrial relations. There are even now establishments and entire industries where standardization is already imposed upon the employer, not by a board in which his interests are protected by arbitration, but by

labor unions. A general principle which determines standards under these conditions is not to the best interest of the industry, and does not even take into consideration justice either to employers or members of the union, but only the preservation of the existence and power of the union. So long as the union must fight for its existence and is subject to attack, it must adopt this principle just as government's first duty is self-preservation.

"The regulation of industrial standards by joint boards as suggested has the great advantage over the present system in that it eliminates at least three-fourths of the cost of friction and strife between the particular employer and his employees. Each employer then adopts the standards which are current in his trade and knows that all his competitors are on the same basis and have no advantage over him.

"Even under our present system, the chief objection to any one employer's increasing wages lies in the fact that it comes out of the profits unless the increase is general among his competitors, when it is shifted to the consumer of the product. It is easy to foresee a time when the public and not the employers will have the chief interest in opposing wage advances.

"In many, if not most, of the cases where employment conditions are admittedly unsatisfactory, the employers are helpless to improve them on account of the pressure of competition. The plan for organizing adjustment boards provides a remedy for this by attempting to establish standards for itself which are protected against demoralization by competition.

"The tendencies for industries to become more and more dependent upon each other is increasing and the consequence of this is an increasing necessity for industrial peace. The indirect effects of stoppages increase with the greater inte-

gration of industry, and the number of interests and people who suffer from labor difficulty and yet have no direct participation in them grows each year. A street-railway strike, for example, in a great city causes a collateral loss of business all out of proportion to the amount in dispute between the company and its employees. The indirect interests affected by labor disputes are therefore becoming so important as to be entitled to more consideration than they have had in the past.

"Standardization is increasing in the larger industrial establishments. The introduction of employment and labor departments with functionalized executives and more or less application of the principles of scientific management has tended to eliminate the older methods of individual bargaining by a foreman or shop executives. The administration of industrial relations, especially wages, by a skilled person specialized for the work is no longer an experiment. There is a natural tendency wherever the employment manager has been introduced to enlarge his functions until he becomes a part of the management, where his experience and influence are utilized for the benefit of the business in all matters touching the interests of the employees.

EMPLOYEES' GRIEVANCES

"No industrial administration is complete until in some part it is sensitive or responsive to the aspirations and grievances of the employee. The efficiency of production is often affected fundamentally by action taken in other departments of the business. Moreover, the labor manager has an opportunity to interpret a business policy to be established by the working force and may frequently forestall opposition and ill-feeling by timely explanation of the reasons for such policies and standards.

"There is a tendency where standards are fixed by haphazard methods or in the heat of struggle with labor unions for certain fundamentally right and efficient principles to be overlooked or submerged. That wherever there is a standardized wage there should also be a specified measure of proficient labor performed is not to be disputed by any reasonable person; yet situations are created where this just principle is opposed by labor organizations who feel compelled to take that position because of the circumstances of the situation.

"Another principle, equally self-evident, is that every worker has a moral right to compensation in direct proportion to his individual accomplishment, yet for reasons which seem to them to be valid, the unions frequently set themselves squarely against piece-work or bonus systems which aim to employ this principle. Under some system of standardization it is likely that these just principles may be reestablished with proper safeguards against abuse, but not until then is it possible to utilize them without creating grievances.

"The war period has created a very perceptible change in attitude on the part of employers toward what is loosely termed "collective bargaining." This does not mean, of course, that the management of industry should be turned over to labor unions, nor does it even mean that employers shall have dealings with the officials of labor unions. It does mean, however, that employers recognize the need for a greater sense of responsibility on the part of the employees toward the efficiency and success of the business in which they are engaged, and that in order to develop this sense of responsibility greater participation in those matters which vitally concern them shall be granted to the workers. Moreover, the worker should be given an opportunity

to learn more about the policies of the establishment and the difficulties of management. It is recognized that the indifference and even hostility of the workers to efficiency arises from their relationship to the business and the absence of reasons why they should be interested.

REPRESENTATION IN INDUSTRY

"The Federal Labor Administration, following the President's proclamation by which the War Labor Board was created and manifested in the collective-bargaining clauses of the Quartermaster's and Ordnance contracts, gave an impetus to the general principle of participation in management which many have begun to see offers an opportunity for a general betterment of industrial relations in individual plants. The introduction of a system of organized representation of employees by the Standard Oil interests and the apparent success of the idea has stimulated general interest, and it now appears that this idea is likely to be much more generally accepted, especially by large industrial plants.

"The misgivings with which many industrial employers contemplate the introduction of this principle is due to their fear that it may introduce unionism in some of its evil forms into their establishments, and if this were true they would be justified. It seems clear, however, that the worst features of unionism are due to the circumstances in which these organizations must be created and developed; the vigorous opposition of employers to organization among the workers creates in them a spirit of antagonism to the employer, and this naturally creates a type of organization which, because of the hostility engendered by the warfare with employers, must fight for its life, and in so doing, must create a spirit of hatred and disloyalty to the employer among the membership. We have seen in the great war

that efficiency in fighting depends upon the passionate feeling which can be developed in fighters against the enemy. This accounts for the unreasonable and violent practices and policies of the labor unions.

"It is reasonable to expect that organization of employees fostered by the employer and given full opportunity to function legitimately in matters which touch the interests of employees may develop into constructive agencies whose criticisms and suggestions may be of great value in improving the efficiency of the business. In fact, there has been enough experience in several American establishments and industries to show that this is a natural development of employees' representation. That responsibility creates conservatism is a truth which has been demonstrated, and nowhere more convincingly than in industrial relations. Give employees responsibility and opportunity to exercise it and sooner or later there must develop leadership among them which will contribute not a little to the vitality and general efficiency of the establishment.

GIVE LABOR A FAIR SHARE

"To make this plan truly successful, however, the management must decide to give labor a fair share of the results of the efficiencies and economies realized. Too often by the introduction of new methods and labor-saving machinery the employer cannot bring himself to yield a share of the benefits to the employees, although he expects them to bear uncomplainingly the hardships which may attend the transition. The difficulties of systematically giving to the workers their share of the profits are perplexing. In fact, the subject of profit sharing is very attractive to any student of industrial relations, but the particular difficulties have frightened many away from the subject.

The general principle that every man should have the opportunity to reap the reward of his own efficient efforts whether applied individually or collectively with others is admitted by all, and most people admit that the principle must be employed in some form in an ideal system.

"Experience with profit sharing has revealed certain truths: The more direct and immediate the relation between reward and special effort or efficiency, the more likely it is to be successful. The greater the benefit realized by the worker or his family through the reward of special effort, the more effective is it as an inducement. Bonuses or other extra rewards which are spent by the worker in a wasteful manner and without a proportionate improvement in his general well-being are not so highly appreciated as those which represent some permanent benefit, such as insurance for his family against sickness or death, permanent improvement in his living conditions, especially housing, or investments which increase his feeling of security and give him an incentive to thrift. Any system of profit sharing, therefore, should take into full account the permanent needs of the worker and attempt to satisfy them to a maximum.

"The absence of any recognized principle for the distribution of the profits of a business as between the proprietor and the workers is a great problem, especially where there is an amicable system of industrial relations in vogue. It is difficult to know what is the right and just method to use, but the difficulty will be largely overcome in the individual establishment by the plan of standardization or regulation of industrial relations by industries which has been previously suggested.

"If this perplexing matter of distribution could be eliminated from the relationship between employer and employees

in particular establishments, then the introduction of the ideas of employment—labor management, representation of employees, responsible leadership among the employees and the comprehensive service department helping the employees to collectively improve their living conditions—might result in a relationship so applicable and profitable to both employer and employee that we might anticipate, if not have the solution of the labor problem; at least, so great an improvement over the old condition as to constitute an industrial revolution in the best sense of the word."

CHAPTER IX

COLLECTIVE BARGAINING

It seems to be pretty generally conceded that the era of collective bargaining is at hand. This means that workers must be dealt with through their organizations or their representatives just as in all legal cases both sides are represented by their lawyers. It does not matter whether we like the lawyer our opponents have selected or not, the court hears them as long as they keep within the law. If we refuse to answer the questions of their lawyer, unless for especially good reasons, the judge reprimands us.

Among the conservative men who see that individual dealings with workmen is on the wane is Justice Charles E. Hughes who, in his late speech before the Institute of Arts and Sciences at Columbia University on November 30, 1918, said:

“I trust there will be no more struggles in futile opposition to the right of collective bargaining on the part of employees. The recognition of the right of representation and the prompt hearing of grievances provide the open doors to reasonable and just settlements. And in returning to peace conditions there should be the utmost care to preserve

every possible means which has been found helpful during the war for the investigation of the complaints of labor and for the adjustment of demands."

Ex-president William Howard Taft goes into more details in a copyrighted editorial in the Philadelphia Public Ledger, as follows:

"Organization of labor has become a recognized institution in all the civilized countries of the world. It has come to stay; it is full of usefulness and is necessary to the laborer. It shows serious defects at times and in some unions. These are an apparent willingness to accept benefits enforced through a fear of lawlessness, a disposition to use duress to compel laborers to join unions, and efforts to limit output and to create a dead level of wages, and thus wipe out the necessary and useful difference in compensation of those who are industrious and skillful and of those who are lazy and do not strive to increase the product of the employer whom they serve.

"These are evils that as the unions grow in wise and intelligent leadership we may well hope will be greatly minimized.

"Much can be done by employers in anticipating just demands of employees. Workers have had too many instances of holding back of employers until they are forced to do justice. Too many employers seek to justify failure to raise wages by pointing to their welfare work for their employees. This is of a paternal character and impresses the workers with the idea that they are being looked after as wards and not treated as men capable of exercising independent discretion as to their welfare. They are apt to give the employees the idea that it is a generous con-

cession they are making out of the goodness of their hearts and that they are not merely yielding a right for a quid pro quo for what they receive.

EXTREMISTS HARD TO DEAL WITH

"The most difficult persons to deal with are the extremists on both sides. On the side of labor there seems to be much suspicion by one leader or another, that few are willing to make a just concession, not because they do not recognize its justice, but because if they admit it they are charged with betraying the cause of labor. Thus they furnish to their rivals in leadership among workingmen the opportunity to undermine their standing with their fellows. This often puts the labor side in an indefensible position and offers to its enemies a basis for criticism that might easily be avoided.

"On the other hand, there is among employers the bourbon, the man who never learns anything and never forgets anything; the man who says: 'It is my legal right to manage my business as I choose, to pay such wages as I choose, to agree to such terms of employment as I choose, to exclude from my employment union men, because I do not approve of the tenets of the union, and to maintain a family arrangement of my own. I do fairly by my men; I pay them what I think is right, and they will not complain unless some outside union agent interferes. I run a closed non-union shop, and I am happy and propose to continue happy.'

LACKS BREADTH OF VISION

"This man is far behind in the progress of our social civilization. He lacks breadth of vision extending beyond the confines of his shop. He looks to fear of courts and

injunctions and police and militia as the ordinary and usual instruments for continuing his business peacefully and maintaining his rights. He is like the man who regards the threat of a divorce court as a proper and usual means of continuing domestic happiness. He does not recognize that we have advanced beyond the state in which employers and employees are mere laws unto themselves.

"He does not see that the whole public is interested in industrial peace. He does not see that the employers have certain duties social in their nature that are not defined and are not enforceable in law, but exist just as family duties of care and affection exist. He has not followed the growth of things.

WERE AT EMPLOYERS' MERCY

"As long as the system that he insists upon continues, individual laborers were at the mercy of their employers. Whatever they got was a concession. They could not maintain themselves in a contest with their employer, dependent as they were on their daily wage and independent as he was with accumulated capital. That very unjust situation led to the organization of labor that the employee by massing contributions may maintain himself during an industrial struggle without wages.

"This has come to collective bargaining, which is bargaining by the group system. A group of laborers knowing their rights and knowing how to maintain them, put themselves on a level with their employers and the result reached is far nearer a just one than any before attained. That it may often be unjust goes without saying, but so are all human attempts to reach the right line. Of course those individual laborers who do not see the advantage to them of the group system have a right to stay out and must be

protected in doing so. But whether we will or not, the group system is here to stay, and every statesman and every man interested in public affairs must recognize that it has to be dealt with as a condition to be favored in such a way as to minimize its abuses and to increase its utility.

HAVE BEEN GIVEN SENSE OF POWER

"The workingmen of the country, since the war began and the importance of their group action has been emphasized by the requirements of the war, have been given a sense of power in their united action which we must recognize and deal with. Of course, they may abuse this power, and, if so, they may find that they are not the entire community; but if under level-headed leadership they do not push it to an excess, they will be able to do much for their members and indeed for the community at large.

"The junkers and the hunkers on both sides must stand aside and will be set aside if common sense prevails. The danger from bolshevism is far greater than from reaction to the bourbon type of employment. The intelligent, conservative leaders of the labor movement should be encouraged. Their difficulties in dealing with their extreme constituents should be recognized.

"A national board, consisting of a number of such intelligent, conservative labor leaders on the one hand, liberal-minded, broad-visioned representatives of the employers on the other hand, should be continued as a refuge to be offered to both sides of an industrial controversy about to engage in wasteful strife by strike and lockout, so that their arguments can be thrashed out and some sort of a compromise approximating justice may be reached. If the national war labor board has shown the wisdom of the use of such a board it has attained a real success."

PREFERS TO DEAL WITH UNIONS

There are many others, well known to all, and most of them conservative rather than radical in all things, who frankly advocate the recognition of labor organizations and coöperation with them. In his address before the Babson Conference on Coöperation, John S. Kent, president of the Brockton Shoe Manufacturers' Association, the National Association of Shoe Manufacturers and also president of a large shoe manufacturing company, before the Babson Conference outlined his 20 years' experience in dealing with the Boot and Shoe Workers' Union, and in all that time there had been no labor disturbance until this year when the radical group formed a new union. This, however, was not at all serious. He advocated the closest coöperation with the labor leaders instead of making outlaws of them, and said that his greatest criticism was that in some cases they built up a certain autocracy in the union, which failed to hold the individual men and women. He believes that every individual in the shop must be made to feel that he or she is a responsible part of the union, of the organization and of the community.

Mr. Kent spoke of the excellent work done by the State Board of Arbitration, and suggested

the advisability of a national labor board to which all matters could be appealed and, if possible, settled. He does not believe that labor will ever be satisfied any more than capital, but that both will strive for better things, which is a good thing for the country. He has found that satisfactory dealings with union or any kind of labor depend largely on the attitude of the employer. The employer must consider that the other man is as human as himself, and must realize that any attempt to keep men down as workmen is largely responsible for the distrust and antagonism found. He believes in meeting his men face to face as men, and in dealing with them through their organizations. He feels that organized labor will break down class distinction and instill a better spirit into the men. This is the result of his 20 years' experience and is therefore entitled to careful consideration.

DECREASING SPOILED WORK

At the same conference C. H. Skinner of the Covert Gear Manufacturing Co. told of the improved results the company has secured since forming an organization in its shop. It includes all the men and foremen and is about to become a part of the regular union. Since the organization was formed, in which an attempt was made to

deal with the men as men and on what Mr. Skinner termed a "fifty-fifty basis," lost time had been reduced from 9 per cent. to less than 4 per cent., production had increased 50 per cent., and spoiled work has also been greatly reduced. The men were asked to organize so that they could be dealt with collectively.

The management endeavors to know its men thoroughly, to see that wages are raised as soon as due and to transfer men from one department to another in order to secure better results, and it has found the combination to work satisfactorily. They believe by taking an interest in the men at their work that this will be returned, as men like to feel that their work is appreciated and that they are coworkers instead of hired hands. The 55-hour week, under which they have been working, has been found too long, and this is to be reduced to 48, as the management is convinced that the output can be made at least equal to that obtained at the present time.

THE TIME HAS COME FOR COÖPERATION

There are those who, owing to unfortunate experiences with labor organizations in the past, believe that their only salvation is to fight all organizations of labor. Whatever may have been the merits of this attitude in the past, it is

untenable at the present time when everything points to the growth of collective bargaining as one of the principles of employment. This has been recognized by all the allied governments, including our own, and it is upheld very strongly by many of the best known British employers who have had much more experience in that direction than we.

No one will deny that labor organizations have made unwarranted demands in the past and that they have not always kept their agreements. Neither would it be difficult to find cases where organizations of employers have taken advantage of their power and where rates have been cut without warrant. Recrimination does no good in either case, the problem is to find a way in which industrial harmony can be secured and maintained with fairness to all concerned. And this we are coming to learn, means the community or general public as well as the employer and employee.

The experience of those employers who have voluntarily granted a large measure of self-government to their employees, or have even given them a voice in the actual management of the concern, shows that there is little to fear from unfair decisions when the facts of case are laid before them. The experience of the Filene

Company as outlined on page 30 can be duplicated in many instances. The average employee means to be fair just as does the average employer. It is the exception on both sides which brings the whole mass into disrepute.

BUILDING UP A LOYAL ORGANIZATION

The manufacturer who decides to gather his organization into a real family group, both as to having a voice in the management of the shop and a share in the profits, is anticipating the trend of the times and can, by so doing, build up such a loyal organization as to make the results astonishing, even to himself. True there are bound to be lean years, but men do not expect the impossible. And when they have confidence in the men at the head, a confidence born of equitable and friendly relations, they will work all the harder when occasion demands.

The millenium is not likely to result from any of the plans suggested, nor should it be expected. No arrangement, however perfect, will function properly at all times. No family ever lives with a complete understanding on all questions at all times, and we should not expect more in the industry with its mixture of nationalities and the great differences in temperament of the different people. We must realize that new problems are

being presented and that they cannot be solved by old methods in all cases.

THE COMMUNITY MUST BE CONSIDERED

The main thing is to adjust ourselves to the newer idea that every one owes a duty to the community and to the country and that the time is passing when we can act without reference to its effect on others. The time is fast going by when we can say, with the old railroad president, "the public be damned."

The manager of a large factory recently announced that he would burn his shop down rather than deal with his men on a disputed question or submit to the ruling of the government's board of arbiters. But he soon found that he was not on a desert island but a member of a community and of a country which needed the products of his factory, and that dire punishment awaited him should he attempt to carry out his threat. It is not easy to accept this doctrine in all cases but there is every indication that it has come to stay and the sooner we recognize it the better for all concerned. Czarism is not to be tolerated on either side of the employment question. There must be a "League of Nations" which shall prevent industrial differences from reaching the warlike stage, if we are

to take our place in the world markets of the coming generation.

A manufacturing friend with an eye for the future has been seeking a method of giving his men an interest in the concern without the usual difficulties of stock transference and similar details. He wishes, for the present at least to retain title to the business, and yet feels that every man who actively produces should have his share of the profits. The plan is as follows and is given as suggestion for any who may be interested along a similar line. It differs from the plans adopted by several such large concerns as the Cleveland Twist Drill Company, which has a very successful method of distribution.

A SUGGESTED PLAN FOR PROFIT SHARING

This plan first lays aside 6 percent as interest or dividend on the money invested which it pays to stock holders. It then puts aside such percentage as may be necessary for a sinking fund to take care of depreciation, renewals and unforeseen contingencies. The remainder of the net profit is then divided pro rata, according to salary, among every worker in the plant.

This is on the assumption that the salaries paid represent the contribution of each worker to the output, and is as fair a way as any, assum-

ing that certain salaries are not padded for this purpose. The owner in this case draws his 6 percent on the capital invested, plus his percentage of the surplus, in accordance with his salary as manager. The superintendent, assuming that his salary was one-half that of the manager would draw one-half as much bonus but the owner would of course, have his interest on capital in addition. If any of the stock was held by one who did not do anything toward the productive work of the company, this stock holder would receive nothing but his 6 percent interest.

In this way each worker virtually has a drawing account the same as a travelling salesman and he gets his commissions, or earnings, at stated intervals. It is generally best to have these intervals as frequent as possible, especially until the system is well established. This brings a very pleasant and a very forcible reminder which proves beyond a doubt that the worker is a part of the institution.

There are, of course, many other details to be considered. Continuity of service, the rewards due to standing by a firm through thick and thin, must be cared for in some way. The value of the accumulated knowledge of years must also be considered. But this may form some sort of

a basis from which a workable plan may be evolved.

The details of such a plan as this must be worked out for the individual case. But there can hardly be a question as to the effective organization which can be built up in this way, where every man can see how his own efforts and those of his co-workers affect the profits or bonus which he will receive. The shirker is weeded out by his companions without much hesitation when he is a menace to their earnings.

Other shops have worked out plans of giving a bonus for steady attendance every day of the week and an additional bonus when the monthly sheet shows no absences. These have had a very good effect in preventing machines from lying idle, but this is automatically taken care of by the general bonus or profit-sharing plan as first outlined.

The bonus on all work over a set standard is quite a common practice but is not as popular as it might be in some quarters. The charge is frequently made that it is used as a method of inducing speeding up beyond a safe limit, but this of course depends upon the needs or on the avariciousness of the man in question.

Some object to anything approaching profit-sharing on the ground that it necessitates showing

the books of the company to the workers. The workings of the income tax law has however, paved the way for this as we can have very few secrets in this connection and, when we get over the first shock of the new procedure, it will not seem nearly as difficult, should we decide that this is the better way. But whatever we do, let us keep abreast of the tide instead of being swept along with it.

THE SQUARE DEAL WILL WIN

No one can predict with any certainty as to the working out of the problems which are before us. But if we can prevent clashes between the radicals of both capital and labor, all will be well. The radicals on both sides are dangerous to the well being of the country. We have, fortunately, large employers of labor who see that the old condition was not all that might be desired and who are striving to bring about a better understanding between all the parties involved. Some of the best known efficiency engineers are pointing out that true efficiency does not mean the lowest wage or the highest dividend. H. L. Gantt points out that when the management cannot keep all its machines busy it should not expect dividends on the idle machines. In other words

idle capital should not expect returns any more than idle labor.

Whatever the method of adjusting the returns from both labor and capital, the principle of the square deal must be observed if we are to have industrial peace and to share in the prosperity which will come after the period of readjustment. Many of the old idols will fall by the wayside and vested privileges will go the way of empires and kingdoms. Few things will remain as they were before the great war. Production is more necessary than ever before and we must utilize every means of securing it. Harmony will add much to the total output.

It is in the hope that by interesting the real progressives of both capital and labor we can work out an equitable solution of the many problems, that this little book has been written. And with the motto of the square deal before us, and a true sense of humanity and democracy, we can all do something for the industry and for the country as a whole.

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